Water-tech, rail-roads and new-cities

A 0.2% Roman aqueduct slope
The Romans used a 1:4800 slope on their aqueducts. I use 1:5,000, or 0.2% for my estimates. But 0.1% or less might might also work with larger pipes and a slower rate. This is 1-meter per kilometer, or 100-meters per 100-kilometers that we will have to raise the water.

Understanding pipe friction
Pipe friction is the way contact with a stationary pipe slows the water moving through the pipe. The inflection point is around 1 meter per second. Faster than this and the energy required to pump water through a pipe grows exponentially. Slower than this and the energy required tails-off like the long tail on an exponent curve.

Now think about the air/wind hitting your hand when you put it outside the window of a moving car. The force of the wind is nothing at 10kph, and stronger at 50kph and much stronger at 150kph. The resistance of air is a function of speed — and it is the exponent of speed.

Water is in pipes works much the same way. That is why we can't do much better than a couple meters per second through small pipes. The water molecules start colliding with the stationary material on the inside edge of the pipe and this causes resistance called pipe friction. And it is all rather like wind resistance on your vehicle, except it is occurring with the wall of the pipe containing the fluid.

But now that we understand this, we can realize something else. It is that if we build oversized pipes and slow the water down, the pipe friction declines to almost nothing.

Inverted siphons
The Romans used these. This is where the flow of water going downhill zigzags a bit up and down while going down hill. At times, some of the water in the sealed pipes is going up hill. But overall the entire line is downward.

Big and slow water movement ducts
How to superconduct water
In order to move water long distances for minimal energy inputs, we will build bigger aqueducts and move the water very slow. We are substituting initial construction cost for energy-free or energy-reduced operation. Where there is a slope, this is not so necessary, but in the plains we will often build greatly oversized pipes to reduce the energy inputs to move each measure of water.

Aqueduct pressure maximum
It would be great if we could use the fall from mountain streams to drive the water far out into the desert. How much pressure is feasible and cost-effective at the bottom of our mountain aqueduct pipes? And we want as much

water pressure as practical pushing the flow of water into the dry plains. This is probably the most important aspect of designing water movement systems that require no energy inputs. At what height does the mountain pipe strength become too costly due to high pressures?

Electro-siphoning
Pipe hydro-electric
Here we put our mountain rivers in perhaps hundreds of 1-to-6 meter pipes and use the water pressure on slopes to dive generators. — just like with a dam. But unlike a dam, there will be no giant lake of water up high. Thus there is almost no possibility of catastrophic failure due as when dams break. Also, the pipes will generally take a route that is different from the the river bed in case of flooding on the river bed. So the rivers themselves will be less likely to flood, because all of the regular annual flows are diverted by the pipe-hydro system on a different course.

A key feature of pipe hydroelectric systems is that we will use the electricity generated in the mountain part of the system to pump the water in the flat part of the system out over great distances. This will greatly increase our ability to project water — which in turn will increase the supply of agricultural land. It will also give us vast amounts of electricity, particularly in India, Southeast Asia, China, and other areas around the Himalayan mountains and the heavy rains of Asia that do not need to pump water for irrigation. Instead there will be a huge surplus of energy here.

Pipe hydro where we don't need water
In Southeast Asia, there is plenty of rain. So we will not need the pipe-hydroelectric for water. Instead we will use it mostly for energy to power our cities and perhaps most of the world's smelting and heat processes.

Pipe bus-bars & pipes fanning out
There will be these bus-arrays of multiple pipes here and there in our pipe-hydro systems. In places, these will branch-off and fan out over the terrain.

hydro-electric — fake vs. real
Look at any dive pressure table. Pressure increases by about one atmosphere per meter of depth. And it does this regardless of how deep you are. So pressure increases in a LINEAR way with depth. So it seems like dams don't really need to be 200 meter tall. In fact, given the high cost of engineering for high pressure water, and the cost of building the mammoth structures, we seem to be better off with lots of smaller pipes instead. Maybe we should use lots of 10 to 20 meter tall water pipes one after another to capture the water and energy of our mountain streams.

Look at how half of America is driving 6-ft X 6-ft Suburban bricks that weight 3X as much as a typical economy car from the late 1970s. Look at our airports with 4-story and 6-story energy wasting cathedral hallways. Maybe OPEC has tampered with our concept of hydro-electric facilities so as to reduce competition for their oil.

Pipe hydro, Zig-zagging down the slope
The pipe busses will rest on the modified surface mostly like a road, and mostly follow the surface contours. However, they will move almost horizontally along the side of the valley for a while. Then, once there is sufficient fall to the bottom of the valley, they will then run at a 10% to 20% slope down the hill to the generators at the end of the pipe at the valley bottom. And there are many pipes in a bus doing this all at once. Then the process repeats.

Depth to pressure is arithmetic
Again, there simply is to need to work with the sort of pressures we see with 200 meter dams. Having twenty 10m dams is almost as efficient for electricity generation, but it is a whole lot cheaper and easier to build and run.

No vertical or near vertical pipes
There is no need for vertical or near vertical pipes. It is much easier and cheaper to have longer pipes on a 10% to 20% grade. On steep terrain our pipe hydro-electric systems will look a lot like mountain roads with endless switchbacks. In fact, there might even be a roadway or railway atop the pipes.

Much cheaper hydro-electric
1/ We use Mass-produced "mega"-pipe fittings and generators that bolt together and can be easily swapped out in case of failure.
2/ We use much lower pressure systems so the pipes and generators can be much cheaper to make.
3/ The system fails much less due to the lower pressure.

Pipe bus forms
Some of the pipe form have exterior frames that bolt together. These can be bolted together in parallel busses and filled with concrete for weight and for binding with the surface. Also for a roadway on top. On the inside of the steel pipes is perhaps stainless steel cladding. There might be a few dozen pipes on the ground with several layers above.

How much of the river's fall is recoverable?
This is the main question regarding the efficiency of a hydro-electric system. And certainly the granularity of pipe hydro systems will give them much greater reach and coverage. It isn't hard to imagine that some rivers near deserts will soon be completely in pipes.

Pipe hydroelectric — more expensive but much better
They will use much more material than dams. But the system is better:
1/ There is much more granularity and reach to this approach. Thus we can harvest more electricity from the world's limited rivers with the greatest gravity energy. We can also simply harvest energy from a greater portion of each river.
2/ It is thousands of times safer for the people living downstream. There are no giant dams and thousands of times less water is impounded by a pipe hydroelectric system.
3/ The existing dams can remain in service if they are not a hazard.
4/ There are no huge lakes evaporating and seeping water. Thus there is more water and less salinity increase.
5/ There is much better water distribution and hence more farmland under cultivation.
6/ Our options for water water storage are increased.
7/ The possibility of bacterial contamination and pollution is vastly less that with open rivers. This is fast becoming an important consideration in many polluted parts of the world.
X/ Thus pipe-hydro is a higher cost but far superior approach. Once built, the pipe hydroelectric appear to be greatly superior to dam hydroelectric.

Optimizing our pipe systems for energy
The energy to move water is the key to the system. We are going to both extract as much energy as possible and then use the energy to "superconduct" the water. This is

so we can take full advantage of irrigation technology and use our planet to its fullest.

Why we must harvest water's gravity energy

It is that during rain storms we will have our greatest need for energy — to pump water far away and into storage. So without the hydro energy, our efforts to pump vast volumes of water here and there would otherwise be impossible to power. It is best that we capture the mountain rainwater runoff's energy, and then use that energy to power pumping the water far away.

Two marginal habitats get deleted

The following two habitats get deleted:
1/ Fast moving steep streams.
2/ Desert streams.
Neither is much inhabited. The fast water areas are too violent, the deserts are too dry at times. So the harm to river life is minimal. Also, there are no large dams that are flooding entire valleys like with conventional hydroelectric dam projects. There is also little risk to communities downstream. So the only thing harmed is the aesthetics of some river valleys that are normally so inaccessible that few people ever go there. Besides, for the wildlife, we can still leak water to support river species here and there if we decide to do this.

Excess capacity to move water

Sooner or later, Earth will another mega volcano like the Tambora eruption. This eruption caused 1816 to be known as the year without a summer. Estimates vary but the eruption caused somewhere around 175 cubic kilometers of material to be blown into the atmosphere, much of it in fine particulates. This resulted in a cooler and drier Earth, with less evaporation and less rainfall. It is the exact opposite of what global warming does. Now the next time an eruption like this occurs, it would sure be helpful if we had the ability to move agricultural water around so we don't have another global food crisis like we had in 1816.

We must share the hydro energy

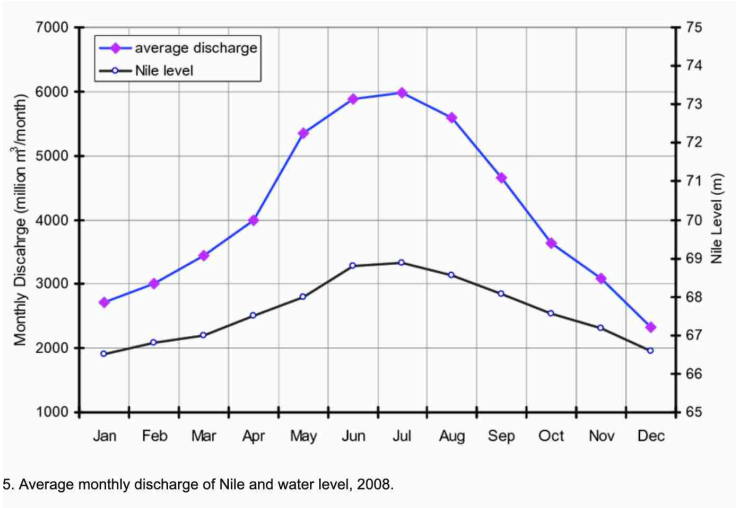
1/ The purpose of the pipe hydro-electric systems is to generate clean electricity and to use the surplus energy to power cities and move water to dry areas so mankind can maximize its food growing abilities.
2/ The electricity and the water need not come from the same place. The electricity will come from the best place to generate electricity, and the water will come from where it uses the least energy to move.
3/ Electricity from the Ganges may be used to pump water from the Narmada river with its abundant dams. In Africa, the rift valley energy may pump water from the Ubangi to Mali, and from the Zambezi to the west, among other parts of the continent that only need a bit more water.
4/ Perhaps only 10% to 25% of Earth's river flows are high up. Thus we will always have more options for moving water than we will have hydro-electric energy sources to use. Thus the energy will always be more scarce than the water, except perhaps near the Janisarit.
5/ The surplus hydro energy for each region must be shared along with the water. And here our compass shall be maximizing world food output capability, not fairness.

The water will always be more plentiful

Whatever we do, the water will be more plentiful than the energy to move/pump that water around.

Who owns the electricity to move the water?

The water and electricity can only be moved so far. It is not practical to ship either the electricity or water between regions. So we will must have regional water districts that pool both water and electricity to some degree.



5. Average monthly discharge of Nile and water level, 2008.

South Asia: Afghanistan, Pakistan, India, Bangladesh, Nepal, Bhutan and Afghanistan.
East Asia: China, Vietnam, Laos, Cambodia, Thailand, Burma, Malaya.

Who owns it?

1/ The new rail-based, well-insulated, centrally heated and cooled world will have a much smaller energy footprint.
2/ Maybe the Himalayan runoff has something like 3 Chinas (current Chinas) of potential energy to it. Maybe we develop this and it provides enough electricity to power all of Asia's cities today.
3/ The only fair solution is to apportion the electricity by population to the people of the region.

Huge dams 4000m up above you

1/ Due to the prevalence of earthquakes and the extreme elevation of the Tibetan plateau, damed water seems

quite dangerous for the people downstream. Just look at the Uttarakhand dam collapse of 2021.02.07.
2/ We should model the water volume and gravity energy and figure out how much force will be released if our giant dams burst. How many people will die? How many deaths are allowable?
3/ The UM should be the final arbiter of safety here. Greed clearly drives many people to take risks with the lives of people living downstream, especially foreigners.
4/ The Himalayas are prone to earthquakes and all dams are vulnerable to earthquakes. And we are never going to get the loads estimated properly. So all large Himalayan dams create unknowable safety issue for the people living downstream. In other words, we should carefully study all the Himalayan water bodies that might flood, including the natural ones.
5/ People should not be living in dangerous places, in valleys under dams. It is like with the people living by the ocean.
6/ The Indus, Ganges, Brahmaputra, Irrawaddy, Mekong, Red, Yangtze and the Yellow rivers all have huge populations living in the river flood zones. None of these rivers should have a "fallible" mega dam high up on or near the Tibetan plateau. It is just too dangerous.
7/ Given the obvious dangers of giant dam projects on floodways above people, we must ask if we are looking at "Chernobyls": engineering projects intended to fail spectacularly. This so people are aghast at the hazards of this sort of energy that competes with petroleum. Instead we should have little micro dams and lots of little pipes. This type of system is safe. So instead of one giant dam, we have this "wire buss" of pipes and silos conveying our pure mountain runoff water and generating electricity with that water.
8/ The giant Himalayan dams of China and India are currently taking great risks for great numbers of people downstream.

Nile facts
Average flow 2,830 cubic meters per second.
This volume supports 280 million people in a total desert that gets almost no rain. This is about one million people per 10 cubic meters per second of water.

And while Egypt imports a great deal of food, it is also much dryer than other places where we would use irrigation water if we could move water great distances. So let's say that:

1 Nile of water = 2,830 cubic meters / second
2,830 is an average. In August, September and early October, the Nile is much higher. So in order to capture the peak flow we will need excess capacity that is only used for a small part of the year. We will need more than a Nile of capacity to handle the peak flood of the Nile.

How many 3-meter pipes is a Nile?
A 2m pipe has an area of 3.14m
A 3m pipe has an area of 7m
A 4m pipe has an area of 13m
A 5m pipe has an area of 20m
A 6m pipe has an area of 28m
A 10m pipe has an area of 79m
A 15m pipe has an area of 177m
A 20m pipe has an area of 314m

So at 1m/ second it would take:
901 — 2m pipes to move 1-Nile of water.
401 — 3m pipes to move 1-Nile of water.
225 – 4m pipes to move 1-Nile of water.
144 — 5m pipes to move 1-Nile of water.

How big is the pipe busbar?
One nile is 2,830 cubic meters per second. That is 100m wide and 28.3m tall. Or maybe it is 200m wide and 14.1m tall. Seen another way, each 4m pipe has a profile of 12.6 meters, so one Nile will take 225 pipes. If these pipes are 5 deep (and 20m tall !), then there needs to be 45 pipes that are 4 meters across. This involves a “road bed” that is about 200m wide.

_How much energy do we save?
How much energy do we save if we only move our water at 0.3-meters per second? What about 0.6-meters per second? We need to get down to the ultra-low energy "super-conductor" rate for pipe resistance when we are pumping water long distances. So we will have to build oversized pipes.

The end of waterfalls and rapids
In 30 years there may not be many large waterfalls or rapids. The gravity energy may be too valuable for powering pipe hydro-electric systems.

Getting ahead of the ball
1/ We should have our water moving infrastructure in place before the ice age. We might not be able to spend a couple years figuring out how to move water.
2/ We should encourage tropical desert agriculture. This especially where the water does not dissipate, and the runoff collected and recycled. Areas like these will get the irrigation water first because they uses the least water to grow the most food.
3/ Where is the volcanic spring water from ocean seepage? These springs will be very precious during ice ages.

72% round trip efficiency...really?
Supposedly hydro-electric is 85% efficient or more. If this is so, then we can have round trips where we can send the water up 72% as far up the next hill. Is this true?

A water network
One of the most important things for surviving the ice age shock is going to be the ability to move large volumes of water around to supplement the rains. Also, we should be able to take the irrigation crawler frames apart easily and move them somewhere else for a season here and a season there.

Distributed catchment = more water stored
The distributed nature of the Pipe hydro allows us to better drive water into the soil and into underground water catchment. This is how we stop the fresh water from being wasted on the oceans.

17-days to prime the pipes
If the water is moving 800km at 50cm per second, that is a 17 day journey. We slow the water way own, so it moves with the least energy inputs.

All the pressure we can handle
Can we have 300m falls on pipes driving say 400km long drains for no energy inputs? I don't know, but we should figure this out. How much pressure can we handle? And how far can we coax the water with no energy inputs? When is it better to use electric systems.

_When does the pumping cost more than the water is worth?

_Falling material on mountain lines
In the most avalanche vulnerable places: The trains will be up on posts and only vulnerable to the biggest avalanches. However, the sections of tracks must be designed so that if there is a big enough jolt from the side that section will slide out sideways. This is so avalanches do not produce cascades failures further down the line.

The pumps
1/ We use standard-sized pumps of various levels that all fit in standard-sized rapid connection brackets. This way, we can quickly build systems and swap-out failed pumps.
2/ Where the pumps are near a train line, we can used giant train sized pumps. Perhaps these pumps come on 7-m rail cars. Or maybe it is 9-m railcars on 7-meter tracks. Or maybe they come on a special super-wide gauge.
4/ We should be able to move our pumps around, so for some time, they might be draining the saltish water from Lake Urmia and then some years later pumping fresh water somewhere else.

Walking drill rigs
Imagine the base of a walking excavator but a bit bigger and supporting a drilling platform that can be used for drilling Footings and keyway holes for bridge columns on steep terrain, as well as mineral exploration holes.

Walking Gantry cranes
Our paired train lines will mostly go apart from one another. So there is only one 7m wide viaduct to supply. Here we can use gantry cranes that have a 19m = 63-ft. throat. There will be 2-to-3 meters of soil load clearance, then 7m of viaduct. Then 1m of clearance, then 7m of

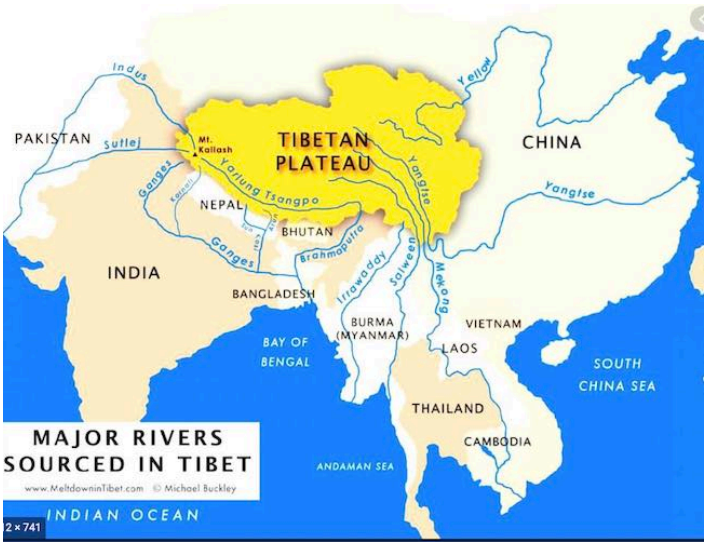
new viaduct section, then 1m of clearance. There are two of these per line of track. One gantry crane takes the blocks off the rail cars and puts them on the self driving flat-bed tank-track trucks. The other gantry crane takes the blocks off the trucks and places them in position.

_Better walking hill equipment feet
The feet rotate and have several "tips" in various rotational positions.
1/ Tires for use on roads.
2/ Earth "swords" with vibrator for gaining a footing on a steep hard slopes.
3/ Thick shovel blades for softer soils.
4/ Terrain matching soil claws/rakes/fingers on perhaps legs 5 & 6 for insect-like footings.

How do the rise slopes compare?
Let's compare the slope range for the continental rise with the slope range of the Himalayan rise. How closely do they match? Are we looking at the same thing? Is this how thick the lithosphere was when the Himalayan plateau formed billions of years ago?

When we build our new cities...
We must do this in places where no failure of a dams is not going to bring water down on the community.

Janisarit, or Janisar
In Sanskrit, Jani = generating, producing, origin, birthplace + Sarit = river(s). This is the name of the area where the Yangtze, Mekong, Salween, and Irrawaddy all pass through.



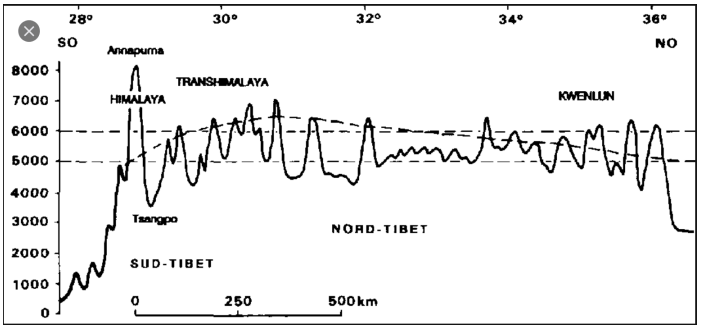
Ganges = 13.4 Niles
Brahmaputra = 7 Niles
Irrawaddy/ Mai Kha = 5.3 Niles
Salween/ Nujiang = 1.8 Niles
Mekong/ Lancang = 5.7 Niles
Red/ Yuanjiang/ lishe = 0.9 Niles
Yangtze/ Jinsha = 10.7 Niles

Around Lijiang China, it is possible to draw a 210km line (a roughly east/west line) that connects the Irrawaddy, Salween, Mekong, and Yangtze rivers. If we include the Yarlung Tsangpo (a Brahmaputra tributary) a bit upstream we add another 50km.

If we add a tributary of the Red/ Lishi river we add another 15km. So here we have 6 huge rivers all coming within about 275km of each other. Altogether it is 6 rivers and about 31.4 Niles of water in a 275km area. This is the Janisarit.

I bet we are able to send water downstream between some of these rivers near the Janisarit. We may even be able to modify natural channels for some. Thus we will be better able to manage flooding in the area. We will also be better able to shift water around during an ice age. Can we have a proper version of the above cutaway of the Himalaya, and super-impose the other mountain ranges to scale. If we do this, the other ranges look quite short and peaky.

Due to Mt. Neverest, and K2, the Himalayas get lots of coverage as mountains. But actually the mountains are not that tall. The Himalayas are more of a raised plateau.



Himalayan rains
This is where most of Asia's rain comes from. This is probably the world's #1 fresh water resource.

The Ministry of Truth at work
The confluence of the Janisarit rivers is a hugely important thing that seems absolutely hidden on most maps. It is hidden, when it should be the #1 geographical fact about Asia. Another thing that is hidden is the plateau nature of Tibet.

Riverbeds

Sandstone
Sandstone teaches us about why riverbeds and lake-beds are waterproof. It is made of loose alluvial sand grains that have been cemented together by minerals precipitated from groundwater either in a river or a lake. Where we have water, the ground tends to become self-sealing and self-hardening over time.

Long narrow ridges from rivers?
Consider the long super-thin, not-so-tall ridges we see in so many places around the world (like Tanda lake Pakistan). Are these from river outflow alluvial material that has re-eroded? Here, the sand dissolves faster, but the mineral-precipitated areas under the narrow river beds are much harder and slower to erode and remain all stacked-up as a ridge and fossil record.

Janisarit-delta rock formations
Where the rivers left the Himalayan plateau they created these swirling river deltas of debris lines that are easily seen in topographic maps. Here the soil is mostly loose alluvial material. But where the water flowed, there is debris and minerals that clog the soil.

So while the Himalayan plateau is solid rock, and the surrounding deltas are loose alluvial material, the valleys that the rivers took through the loose material tend to be rock due to the minerals precipitated by the water. This is

why we see these tall thin straight-ish short ridges all around the Himalaya.

Observations about river beds
1/ The flow of mineral-rich erosion water tends to permeate the surrounding soil. And the more water flows through a spot, the more minerals that spot gets and the more it tends to clog-up with respect to water flows. So most of the well-eroded, old-looking river valleys tend to be waterproof and self clogging, while the new or random river valleys will tend to leak more. So we might have a rule of thumb that goes: "the more eroded the river valley, the more upstream minerals were probably deposited on its floor, and the more waterproof it probably is".
2/ If we are going to be irrigating a desert, we should look for old dry river beds or dry lakes because the ground is normally more waterproof there. The soil is probably better there as well (if it isn't salty). Also, we should generally avoid irrigating dry lakes and other water end-ups because the un-rain-washed underground tends to be salty and this tends to leach out into our irrigation area.
3/ The ground under many rivers has been altered and made more waterproof by the minerals carried in the river water. This is why so many rivers can be so long.
4/ There is layer after layer of impermeable mineral deposit in most deep river valleys and also in alternate valleys, These tend to be waterproof, but they do also leak. Substantial amounts of water leak through and flow through underground layers that are not really subject to either evaporation or dispersal.
5/ We can "look for circling vultures" to find underground water. If we see a large eroded watershed focused on a single valley that seems too dry, we should drill wells.
6/ Can we have a detailed worldwide underground and above ground watershed map combined with an average annual rain map? Can we match watershed size with runoff and see where there is probably groundwater?
7/ There are areas in deserts that have waterproof basins under their soil, and other areas that do not. We should have detailed maps about which places are efficient for irrigation and which are not.
8/ Many lake basins are mineralized and waterproof. It might not be hard to drain and wash out some salt lakes.

Deep drill all the big valleys
All the large watersheds emptying into deserts should be deep drilled so we know about their underground hydrology. There may be many underground aquifers that are stacked up in some places. These may be pouring water out and we just haven't discovered them. Let's do a systematic worldwide survey and let's drill several deep holes using ground-penetrating radar to find all the underground rivers.

Tibetan water impounding
The UM shall determine which high lakes around the world, natural and manmade, are safe and feasible as fresh water storage areas.

Ground water movement at very shallow slopes
Water certainly drains more slowly through drain pipes with a shallow slope. What about groundwater flowing laterally down a shallow slope? How much of a slope is needed to drain groundwater very slowly as a means of temporary catchment? Certainly, there is a point around say 1/2% or 1/4% slope that groundwater runs off through the ground very slowly.

So here is a way to store water, as shallow slow motion riverbed of groundwater that will not be ours to use forever. But we should be able to delay a great deal of water in the soil here-and-there for little cost and and effort (helping the soil build too!), keeping the water around for months perhaps.

Very long valleys, ground water, and time.
Ground water is clearly much slower than surface water. How much slower probably depends on the slope. So the water coming in a mountain valley 300km away might take months to reach the other end in the valley. Perhaps we have this sort of desert agriculture based on driving surface water into the soil of a long pan, and then using the runoff for some months.

Groundwater flow measurement
How much longer does the groundwater flow through the typical desert stream bed for? Let's do surveys where we estimate both river flow and underground flow by the month.
1/ What portion of the typical part year river is flowing underground?
2/ Where the surface water runs dry, how much longer does the underground flow continue for? The graphs will be very interesting.

Underground water catchment
Ideally for farming, we want long shallowly sloped valleys with lots of thick alluvial soil over waterproof rock. Then we establish level terraces and flood these to drive the water into the soil and catch or slow the runoff of the water.

How much seepage occurs in ancient glacial valleys? What about in the valley above Herat Afghanistan Will that hold water at its center?

Underground seepage walls
Plastic sheet in ditch-witch trenches
In some places we might want to limit seepage and ground water runoff. Perhaps we will cut a trench and

insert a continuous sheet of heavy plastic sheeting. This might also help with corralling
groundwater water runoff into collection wells.

Ground water recovery dams
1/ In the Kabul valley, which looks geologically compartmentalized, perhaps we will install groundwater dams to the bedrock in places and use the thick soil as an annual groundwater reservoir.
2/ It is easy to imagine wells and Chevron shaped ponds cut to the flow-line and bedrock in groundwater valleys. here we capture the water coursing through the valley.

Hydro-electric goes on hills
Water impounding goes anywhere

Captured rivers
This is a river where all of the water gets captured and used and none of the water makes it to the ocean, or salt pans like the Aral Sea. The precious desert water of the Indus, Euphrates, Tigris, Arizona Colorado, and Rio Grande should all be entirely captured and used by man. Also, all of these river should prohibit all WR-1 and WR-2 crops with irrigation system water, unless there is a runoff situation.

Totally artificial rivers
The upstream water all goes into pipes. With the river bottoms near the ocean, the rivers become a spillway (that is often concrete and "a mile wide" as it goes through the final shallow delta) The spillway is for typhoon overflows and for saltwater from washing the land.

The most polluted places will be among the first to shift to artificial rivers. This will not only include human polluted industrial areas, but places naturally polluted with salt. For example, the Aras river will have a giant spillway for the drainage of Lake Urmia and perhaps Lake Van via hydro-electric spillage. This system also conveniently has energy and water capacity for heavy and sustained winter rainfalls.

The Arizona Aqueduct above

Termez to Turkmenabat irrigation project
1/ As an example of a new sort of irrigation project, let's take the valley from Termez to Turkmenabat, which is about 390km and a fall of 115m, or a fall of 1-meter per 3.4km of river. So every 3.4km we have a 1 meter vertical offset. I don't know that this is a waterproof valley, but I presume so. It should be at the center at least.
2/ Let's say we have a small back slope on our level terraces and the high point is at the step to the next terrace below. And let's put our access roads on top of fat raised 6 meter wide berms And inside we have large flat flood-able terraces that help us drive water into the ground where it might take months for the runoff process to run its course down the long sloping valley from the top (where we grow dryer crops)

Terraces with concrete edges
Maybe we put 6cm x 40cm concrete overflow panels (like the sort people use for sub-floors, but without rebar due to the spalling issues). These are 3/4 buried and the exposed part holds/maintains an overflow flood barrier at a precise level. Under this, and over the short terrace slope goes plastic sheeting to protect the downside slope from the runoff, and also to reduce evaporation. And the concrete panels are cemented together every meter say. And maybe there are these steel H-shaped ground staples every 1 meter that are vibrated/jack-hammered into the soil when it is wet. These help hold the concrete overflow panels pieces in place. There might also be overlapping tensioning cables at the top. But this is how the irrigation overflow and a level edge are managed for a low cost.

Maple seed pod terraces
1/ Imagine a river valley terraced in the form of a series of maple seeds, or perhaps we could also describe it as a long chevron shape, or a chevron snake.
2/ Let's say that our wings create one 4km long mini waterfall, of 5cm of water per side, that is 8,000m x 5cm = 400. If the water is moving at 1m/second, this is 400-cubic meters per second. If the water is flowing at 1-m/second it is 800 cubic meters per second. This is 0.14 Niles. If we have say an 8+8km wide maple seed shaped terrace system that is 0.28 Niles.
3/ This seems the best way to create artificial river valleys.

Maple seed 2-way water grid
Let's say we are in a valley where the slope down stream is 2-per mil, or two meters per kilometer. And lets say we have 10 fields (roughly 1-km square each) that we refer to ABCDE on the left side of a river's maple-seed form and FGHIJ on the right side. And let's say that the top most row is 1, and the next downstream is 2 and so forth.
So here is how to do fields that use gravity to both fill and empty: To fill the fields we have the water go from A1, to A2, to A3, and from B1, to B2, to B3, and so fort down the stream, And to drain the fields we go from A1 to E1, or from J1 to F1. So we can easily flood our fields, and at the same time, we can also drain them at will. This is ideal for both driving water into the ground and also for washing salt from fields as needed.

Also, I use 1km fields with 1m offsets because it is easy to conceptualize. Maybe we will use 500m terraces with 50cm offsets Or maybe we have terraces with 30cm (12") offsets that are even closer together. • • • But let's say there was an early season storm that flooded everything and there are more storms expected. Maybe we floor our semi salty fields and after a day or two, we dump the salty standing water back into the lined stream bed, so the salt can harmlessly wash into the ocean.

The sluicing pool
There is a sluicing pool at the top of the terraced area. Here the water comes into a lake and there are say 10 or 2o equal outlets for the lake. There is also a bypass here and water can be run down the waste channel.

The Aras dam and the Volga
1/ The water comes out of the Aras dam hydroelectric tubes at maybe 210m elevation or less. Then the water runs in the Los Angeles style flood channel to the Caspian Sea. If a storm is coming, then we close the lake drainage system and drain the salt water from the system. Then we start running fresh water from the dam thought the system to give the water absorption a bit more time and better use storm rain. Then it rains, and more of the dam overflow water gets dispersed.
2/ Having the Volga water on standby allows all of the Aras dam to be completely used up in each season.

Ice age prep farming
1/ Mountain water and water from a large watershed tends to be more consistent than rain.
2/ We set up the infrastructure and maintain it as an ice age preparation thing. The agriculture then just lives on the water and land.

Three Gorges dam
The Yangtze is 10.7 Niles falling 181m. However, depending on the year, the maximum Yangtze flow runs up to 55,000 cubic meters per second (19.4 Niles), while the hydro electric generators at the Three Gorges dam can only handle about 30,000 cubic meters per second. So about 20% of the Yangtze's water flows around the dam's hydro electric power.

50 or 60 Niles falling 4200m
This is about how much river water comes down from the Himalayan plateau. It is 4.67X as much water than the Yangtze and it falls 23.2X as far as with China's Three Gorges dam, which supplies about say 9.3% of China's electricity. And 4.67 X 23.2 = 108.34. And if we have full peak monsoon capacity in our system, that number might be around 130 times the three Gorges Dam and 12 times China's current power use. (This is not counting the fact that much of the water in these rivers not as high up as 4200m, and also that some parts of some rivers may prove inaccessible.)

So we should be able to use pipe hydro-electric to power all of Asia today a couple times over. Or we might build an energy efficient township and rail based world with much lower energy use. Then we use the remainder of the power to move water around, or to increase metal or food stockpiles, or whatever.

Insulated pipe hydro
Maybe we can get the snow-melt water down from the mountains at say 5°C and we can use it for both water and cooling. Maybe the Himalayan water cools the Indian city before it is sent to the country to irrigate crops.

No lifting for closed system water
In closed system, the water going down equals the water going up. So perhaps we can pump cold water down and then through reverse siphon, we get warm water back up say 500-1000m or more. Thus we can bring the cold from melt water down to cool our communities in summer. And again, maybe the flow rate is 40cm/ second to minimize pipe friction, the only force that actually must be overcome.

Your land their water
I am not so much getting the host to give the parasite land. Instead, to a large extent, the parasite stays where it is, and gets wasted water instead. And this is water that is just getting dumped into the ocean. So they don't really care.

At what point does it become easier to grow food somewhere else, than to move water so far?

Windmills and sails
We have these places where the windmills are in a narrow mountain pass with steady wind. Why don't we hang a suspension bridge line across the valley bottom and connect this to the ground and put sail structures in between that funnel and focus more wind energy on the windmills. Maybe we can put our windmills near the ground with only the fan that 10 stories tall (or whatever) Will this make wind energy work?

Water and power windmills
Ok, so we have these fans in a manmade wind funnel in a valley that acts as a natural wind funnel. Maybe 5% of the time, the power from each windmill is diverted to turn hydrophilic wheels that spin off water.

The desert water scarcity rule
It is that whoever can grow the most valuable food with it gets the water. There are not historical rights with regard to water use.

Agricultural water rationing
This is an incomplete list. Also occasional deficit irrigation might be permitted. But the general idea is there:
WR-1 = Water-rationing-1: Scarce irrigation water cannot be used to grow alfalfa, tree nuts, sugar cane, for aquaculture, or irrigating pasture.
WR-2 = Water-rationing-2: Scarce irrigation water also cannot be used to grow rice or crops that use as much water as rice.
WR-3 = Water-rationing-3: Scarce irrigation water also cannot be used to grow corn or deciduous tree crops, or crops that use as much water as these crops.
Exemptions: Agricultural plants in waterproof plastic water pots are always exempt from agricultural water rationing. Also plants in certain runoff control areas may also be exempt.

Population density per square KM

Pakistan	256
India	382
Bangladesh	1,126
Burma	83
Thailand	137
Laos	32
Cambodia	92
Vietnam	308
China	153
USA	36
Canada	4
Australia	3

Tanda lake Pakistan
1/ The long narrow hills in this area look like they came from river minerals. Also, it seems like the ground under these river/glacier valley formations are water tight. It appears that minerals tend to make the ground waterproof.
2/ The lake formed and then part of the side washed out. Then people came along and fixed the leak with a dam (below and to the right of the word Lake) . The leak is why the soil here is not salty. Where basins are waterproof, they tends to get salty from the accumulated evaporation.
3/ We should find all the old lakes in dry areas that have washed out and study them as potential places to impound water. This especially when they are easy to repair like Tanda lake.
4/ We might also try to wash the salt out of some basins with fresh water while the world has excess fresh water to spill into the ocean.

The Kabul valley oasis
1/ Perhaps if we manage the Kabul river so the water is all captured in the Kabul Valley, perhaps then we can turn the Kabul valley green from Guldara to Karoti. Perhaps we make 9 groundwater dams of some sort out of the buried ridges. Maybe we fill all the areas with ground water to a few below the surface without the water becoming salty. Or maybe we have to fill the underground areas once or twice to wash the salt out.
2/ Because we are recycling this water and theoretically using it to grow food, there should be no livestock in the

valley. Also, all the people living in the valley must have sewage that is discharged outside the valley.
3/ This sort of dry lake bed is famously why Mexico City has such bad earthquakes. Here we see another sort of place where people should not to build houses upon the sand. Also, why waste good agricultural land on cities when everyone prefers to live up higher where it is safer and the air is cleaner and the views nicer? The city should go in a ring near, or on the edge of the hills, on the terrain that is perhaps too steep for farming. This higher soil remains dry and thus is not subject to liquefaction or flooding. Also, nobody can live in the fan of any river coming out of any valley.
4/ The interchange station goes on the raised slope south of Qala-E-Samandar.

Kabul and ground water
There may be a ground water reservoir under the Kabul valley:
1/ However this may be salty and not feasible for this reason.
2/ Irreparably leaky and not feasible for this reason.
3/ Immense. It may be able to hold enough water for years of use on the surface above.
4/ Require numerous wells in specific low spots to work ideally for water storage.
5/ Provide us with water storage that does not evaporate much.
6/ Provide us with a dry habitation fringe that is earthquake safe.
7/ Provide us with water storage that does not in any significant way reduce the cultivation area.

Afghanistan
Dry mountains are the worst. This is because it doesn't make economic sense to pump water very far uphill. At least with dry lowlands, we can often divert water from some distant mountains. For this reason, Kabul will probably have to rely on the 1/6th of a Nile of water that the Kabul river supplies. Use it well. There doesn't seem to be a way to get you more water without 100km of tunnel, or pumping water at least 800 meters uphill.

Food must equal population
It it worth repeating. The deserts that can't feed themselves are the soil that Ishtar naturally grows in. If we are serious about killing Ishtar and keeping it dead (because it will just spring right back to life if it has desperation as fuel)... If we are serious about keeping Ishtar dead, then we must end the desperation. So all the places with without a means of economic viability, such as a mine or industry: we must move the people.

The Nile and the Kabul river
1/ The Nile has about 6 times the annual flow of the Kabul river.
2/ The Nile supports 6-million acres of cultivation in Egypt, so the Kabul should support about 1-million.
3/ The Nille supports about 140 million people, so the Kabul river should support about 1/6 of that or about 23-million people. This especially considering that Kabul gets 31-cm of rain on average annually while Cairo gets 2-cm of rain.
4/ The Kabul valley project from Guldara in the north to Karoti/Charkh/ Aw Nara/ Salar/ Bar Mamel area in the south is about half a million acres. This is about the farmland that supports 11-million Egyptians.
5/ The foregoing numbers are conservative and even underestimates because:
A/ Kabul gets 33-cm of rainfall (almost enough to grow crops) while Egypt gets about 2-cm on average.
B/ The Kabul area has a few other minor rivers with water that can be captured and redirected back to increase the water supply.
X/ Therefore it seems that the Kabul river can support perhaps 2 or 4 Kabul valley projects.

Quid pro quo
1/ The people of wet greater India will give the people of dry greater India a great deal of water now wasted on the ocean. And in return, the people of dry India and the Mideast shall never again hinder the people or trade of wet India on its way to market. India gets safe free passage through Arab lands (including Pakistan, Iran, and Central Asia) for all their generations. This is so Ishtar can be killed from these poor lands that breeds the spirit of desperation.
2/ India's route to the Mideast and Africa (a route with no mountains) shall be near the coast of Pakistan and Iran. and through Iraq.
3/ The Swiss are drilling a tunnel 57KM long (Gotthard base tunnel), and the Kabul pass (Saricha road) is a bit less than that. If india wishes to make a tunnel here, it may and it shall forever own that tunnel.
4/ It shall be India's right to use any passes or drill any tunnels it wishes to get to get to the northwest via the Kabul area, provided they do not interfere with other infrastructure at critical locations such as aqueducts at the base of Saricha road.
5/ India can also use the mountain route from Kabul via Gonbad and Ghandak to Baghlan, Termez, etc. India shall have the right to build train lines though Pakistan, Afghanistan, and Iran in whatever exurban pass/route it sees fit to use.
6/ If India's shipments come under attack in former Muslim lands, then India shall have the right to secure its ex-urban route through those former Muslim lands to include Pakistan, Bangladesh, Afghanistan, Iran and all other former Muslim lands. If any remote section of India's route to market comes under armed attack, then India

may clear those areas of people for up to to 5km from the route and for up to 10-years.

Supplementing the Kabul river
Look at Kabul's watershed area. Now compare this with the upper Alishing river, where it forks into 4 rivers. The watershed is tiny. And where Saricha road leaves the Panjshir river: Let's say we bore a 32km tunnel for the water, so it stays at 3,000m. Let's say we drill this and install a big network of mini collection dams and pipe aqueducts at or above 3,000m. What do we get for our huge efforts? We get maybe 20% more watershed for the Kabul river. The water project doesn't seem worth the effort.

Around Kabul, it is alway too much tunnel, not enough watershed. And why are we pumping water up hill to water an area that is too high for many plants? This place needs to manage with the Kabul River. All of this river's water needs to stay up at or above 1600m. Save what you have and use it well in Kabul, because I can't think of a better way than using energy to pump Aishing river water from around 1200m all the way up from Kabul at 1800m — which is a fairly stupid waste of energy given the infertility of the land due to elevation and dryness.

A gravity outfall system for the Kabul river
1/ We build a series of water catchment dams on the Panjashir river and its main tributaries such as the Darae Hazara valley. The final dam goes at ~1950m just below Tawak. Also, it will not be terribly hard to build a road around this dam on the south side.
2 We build with heavy duty pipes that have a low point of say 1650 on the way to final outlets at say 1750m near Guildara, or perhaps further south.
3/ The Dam on Bamiyan Charikar highway valley should probably have a ~4km tunnel through to the Kabul valley for its managed flows. This valley has an even bigger watershed than the Panjashir river.
4/ As much as possible our water delivery systems should use no energy to pump water up hill. And as much as possible we capture the gravity energy and use it to transport water somewhere else.
5/ The pipes at the bottom of our long gravity drain will have to be rather thick. And maybe we us lots of material, but then we have a water solution for the Kabul valley that never needs energy inputs and has no moving parts.

Himalayan train switchbacks
Due to the distancing of cars, the trains are able to drive off the tracks, veer to the side a bit and come to a stop. Then they can drive backwards to the other leg of track on the other side of the switchback. So switchbacks can be the length required for a bus to stop and go backwards. And again, this is on 2-story track, so the upstairs tracks are going uphill, while the downstairs tracks are going downhill.

Chamba gul Pakistan
We already have a dam here and the rainfall is enough to grow crops. What I am proposing is that we use some of that Indus river pipe hydroelectric power to pump some newly abundant Indus river water up 200 meters to fill the dam. I am also proposing that that dam be made taller so we can store more water here for the dry season. Also let's re-terrace the fields properly as discussed later. There might also be another small pipe system that applies small amounts of scarce dry season water to the fields in a way that is precisely measured and distributed. This is the sort of desert water project that we use pipe hydroelectric to power.

Selling current back to the grid
The way Californians sell electricity from their solar panels back to the system for money — Dry countries should emulate that for dry season water from safe permitted water storage systems.

The Loralai plateau
This area is up at 2000m. It gets rain due to the rise. It looks like it should have potential for underground water storage.

Manzai Dry lake Pakistan
All the water going into the Anambar River is being wasted on the desert below. This is a very easy seasonal river to divert and impound. There also seems to be a leak as is ideal.

Naharkot dry lake Pakistan
Here is a place that looks promising as desert farming basin with perhaps a 10 sq. mile alluvial area at the bottom for storing underground water.

The seasonal rivers
of the Baluchistan highlands
All of these rivers at 800-1600m up should be stopped and redirected to places like Manzai and Naharkot. Water is just so scarce on the Afghan plateau and so abundant in the Indus valley by comparison. There is no reason to let this water spill off into the Indus basin. Keep it up high and use it there.

Jandola & Gomal Zam area
This area close to 2000 meters and a bit too high up to farm.

Indian river volumes
Ganges = 13.4 Niles
Brahmaputra = 7 Niles
Narmada = 0.5 Nile
Yamuna = 1-Nile

Srinigar
This is a "dry" lake like Mexico city, and an earthquake zone. It is a great place for a community, but as a precaution against liquefaction, put the communities at the edge where there is no ground water below. In fact, we should do this with all lake communities.

Mama Ganga... India's sacred river
I have explained in detail elsewhere how the Arabs got the Romans to believe that the ocean was sacred. The Arabs got the Romans to think that if they didn't burn piles of their super-expensive frankincense incense, that the god of the ocean would swallow up their ships. And according to Pliny, this incense sold at times for its weight in gold. And this incense is exactly the same expensive frankincense incense that Tamil temples still burn.

I have also explained how the Laws of Manu (among other ancient Indian texts) were frequently angling in the same way with India's religions, so the Mideast can profit. Here with the Ganges, and especially the head of the river farthest west and closest to where it is most needed, in the drier part of the continent — here is where we find a "sacred river" and a water source that can't be diverted for irrigation projects. So what happens then as a result? Doesn't India become more dependent on overpriced imported food that the Arabs sell? So to my mind, this idea that the Ganges is sacred and cannot be used — this idea is fake, and a thing added by the Mideast so it can batten on India's repeated food misfortunes.

And another thing, the custom where Indians float the corpses of their dead down India's main river: That is obviously a custom that spreads diseases. It is not a custom that arose naturally. It is not going anywhere near the right direction that logic would dictate. No. It is going 180° in the wrong direction. It is going in the direction that someone trying to harm your civilization would have you go in. In other words, because of its direction, we can with confidence say that this is not a real custom either.

Instead we should send the westernmost tributaries of the Ganges west, across some part of north India (which is more or less flat). Put the water in giant pipes and pipe it to Western India and Pakistan where people need water.

India's water wealth
The Ganges plus the Brahmaputra is over 20 Niles of water. This is mostly spilled into the ocean. The Indus river, the lifeblood of Pakistan has 2.4 Niles of water which is all used.

You say Hindus, I say Indus
There is way too much water on the Bangladesh side and not enough on the Pakistan side. We obviously need a continent-scale water moving project: although the water doesn't actually need to be moved nearly that far.

Half of India under irrigation
In the east there is lots of rain. In the west, irrigation is needed. And the middle is place that will benefit greatly from a little irrigation. And the Ganges and Brahmaputra river are wasting 20 Niles of fresh water on the ocean. Why?

Dam leverage
This is the water mass divided by the dam mass. For Hoover dam, this is the mass of the Dam structure divided by the mass of Lake Mead.

Narmada dam leverage
All dams should have leverage number, and a surface area. How do the Narmada dams compare to the other dams people are building around the world?

The Narmada dams
The impounding of water is costly, wasteful, and dangerous. Let's keep the 24+ dams on the Narmada because they are already built and very few people are living downstream. But from now on, let's focus more on getting the water into the surrounding dry areas rather than impounding.

Himalayan watershed rights
1/ Except for Indian territory, the entire Indus and Sutiej watershed shall belong to Pakistan. The earlier and pre-existing territorial rights of the Hindus of India shall remain. This however does not include the majority Muslim areas that will be lost in the global border re-alignment. No portion of the Indus and Suiej watershed shall belong to any other nations.
2/ The entire Ganges and Brahmaputra (Yarlung Tsangpo) watersheds shall belong to India, Pakistan and Bangladesh. No territory in the watershed of these rivers shall belong to China. Among these three nations, the division of water and electric rights shall be by 1980 population based on population percentages calculated after the border realignment for of Jammu and Kashmir based on ethnic majority. No portion of the Ganges and Brahmaputra watershed shall belong to any other nations.
3/ The water from portion of the Brahmaputra river above including the Lhassa river outfall and near Yamdrok lake shall belong to Pakistan. The portion below shall belong to India. If Pakistan does not take and use the water, then the water shall be India's.
4/ A mere 7 million Chinese colonists are not enough to deprive 1.6 billion Indians and Pakistanis of any other Himalayan water rights. The 6 million Tibetans and 7 million Chinese colonists in Tibet may use up to 1% of the Brahmaputra's water. The Nepalese may use up to 2% of the Brahmaputra's water.

5/ The entire Irrawaddy and Salween (Thanlyin / Nu Jiang) river watersheds shall belong to the Burmas, although Thailand shall have the normal unused water rights for hard to use Salween.
6/ The entire Mekong watershed belongs to Thailand, Laos and Cambodia according to their 1980 population share. No portion of the Mekong watershed shall belong to any other nations.
7/ The Red river watershed belongs to Vietnam. No portion of the Red river watershed shall belong to any other nations.
8/ The Yangtse and Yellow river watersheds and traditionally Chinese areas of Tibet shall belong to China. No portion of the Yangtse and Yellow river watershed shall belong to any other nation but China.
9/ Where the Mekong, Salween, or Red river passes through China territory, China may use up to 2% of the water.
10/ The Janisarit electricity and water are actually a global resource. However, due to the impracticality of sharing power and water over great distances, the Janisarit can only be a regional resource. The electricity generated by the Irrawaddy, Salween, Mekong, Red river, Yangtze, rivers and their tributaries (but not the Pearl river) shall be shared among the nations of Burma, Thailand, Laos, Cambodia, Vietnam, China according to their relative 1980 populations.
11/ The right to use the water of a watershed comes with the right to gather energy from these rivers. This energy is needed to power the downstream distribution of the water.
12/ Except for special deposits approved by the UM, there shall be no mining or mining contamination in this inaccessible yet critically important watershed up high. There shall also be no large dangerous dams (natural or otherwise) above valleys where people live.
13/ Tibet shall become a UM territory due to its potential for starting a war.
14/ The Janisarit hydro-electric water and energy shall be divided up according to 1980 population. This however, does not include the Burmas or Laos because they are both underpopulated and will now take many immigrants. So there 1980 share shall be multiplied by the new immigration multiplier. If the nations doubles its population now from immigration let their 1980 population be counted 2X. If it quadruples its population now from immigration let their 1980 population be counted 4X in the apportionment of water and electricity rights.

India water how far
It might not be worth the energy to send the Ganges water even as far as the line connecting Nagpur and Visakhapatnam. Besides, in the south, water from the west coast is probably a lower energy solution. However this tropical part of India is within 23.5° of the equator and has the strongest light, maybe we should give this place some sort of access to Himalayan water, just in case.

Janisarit transfers
If practical and advantageous, the UM may build facilities for transferring large amount of water between the rivers of the Janisarit. This is both for utility and flood safety.

The uninhabited watershed rule
The nations that have been traditionally the users of a river shall be the owners of that river and its entire watershed, unless another nation traditionally occupied the watershed. The community of peace loving nations must always err on the side of disfavoring modern occupation after the advent of trains and especially automobiles. Otherwise we slope the world towards war. So occupations that substantially began after modern transportation should not count as traditional occupancy of another nation's upstream watershed, even after a century.

The right to harvest unused water
All water-poor UM member nations will all have the right to build aqueducts and take unused water, unused water with no realistic plan for use, from the rivers of their neighbors. However, the recipient nation must:
1/ Be a UM member nation and obey the UM rules, particularly the UM population rules.
2/ Not have nuclear, biological, or chemical weapons or facilities for making these
3/ Be ready in case the benefactor nation ever needs this water back for any reason. Then the water is subject to a even split, with the donor nation able to recoup up to 1/2 of the annual water taken by the receiving nation.
4/ These waste water harvesting rights do not include hydro-electric power rights.
5/ This section is meant for rivers like Volga, Ural, Mississippi and Danube where most of the water is being wasted — and not for rivers like the Nile and Rio Grande where most of the water is used.

Desert river water should never be wasted
None of the water from our desert rivers should reach the sea, except for unusual winter floods. This goes for the Nile, Tigris, Euphrates, Colorado, Rio Grande, and Orange rivers among others.

Jalalabad
1/ This looks like a flood death trap city vulnerable to flooding on 3 tributaries, like Xian in China.
2/ This city is in a place that looks prone to liquefaction.
3/ The area up higher by Wazir is at 1800m will be cool and nice in summer, just like Kabul.
4/ Looking at satellite photos, we can easily see how the alluvial material of the valleys built up from hundreds of glacial melts.
5/ Is the Jalalabad area a good place for storing water that is mostly underground?

Peshawar
This is probably safe. It is probably high enough. It looks like the part of a great tsunami plane that is now uplifted to safety. Let's see what the Cymology survey says.

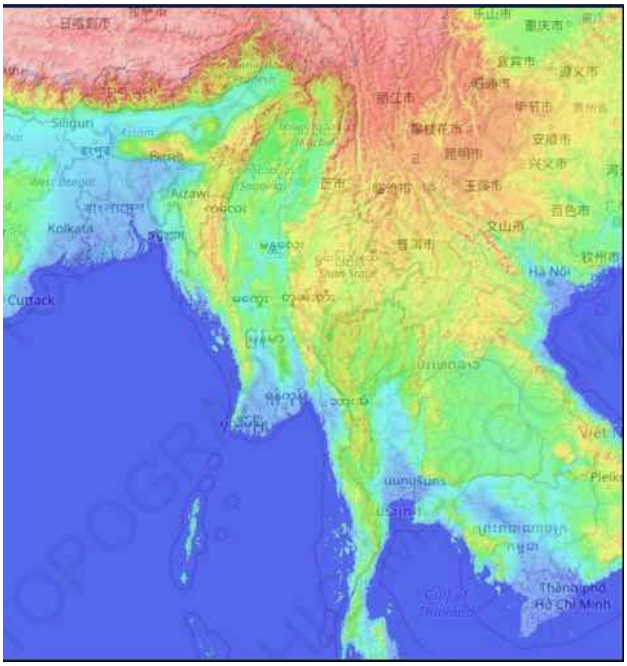
Deficit irrigation
1/ There needs to be at least one or two torrential rains each year for irrigation to work right. Egypt is too dry.
2/ Deficit irrigation uses our scarce irrigation water where it will be best used— in augmenting rainfall. We need some sort of economy for allocating deficit irrigation water.

How to do water taxes
The local Sub-Senates of dry nations without enough water should tax water use to better balance supply with demand. Maybe farmers will use a GPS app to mark their field perimeters. The app will auto send from any wifi signal once it is in range and the system will send a confirmation email about the tax filing. The farmer presses start and walks the perimeter of the field and then when he returns to the beginning, he closes the shape and enters the crop name and then hits the send official water tax declaration. This is combined with the reading on the self-serve electronic valve that mets out water to his neighborhood. Thus we tax farm water automatically with perfect granularity. And the system favors the smallest deficit irrigation practices over the largest. In fact probably charging higher rates for more use per acre.

Desert farmers are primarily taxed with water. Thus neither property taxes or land purchase/rental costs are high. Only scarce water is expensive. In these desert communities, it might be best if water was made into the biggest source of tax income.

Lahore is at 217m
We should really know if tsunamis reach that high or if we are looking at uplift acting on old tsunami areas that have been raised.

Bangladesh is obviously wasteland
Pakistan isn't as obviously wasteland
With Bangladesh the reason the Hindus were not living there is pretty clear, the place was obviously washed out. We can see this from the maps. With Pakistan and Indonesia and all the Muslim places of the Indian ocean the situation is uncertain.



4**-South Asian death trap cities**
Bangladesh, Yangon, Bangkok, Saigon are all in tsunami death trap locations.

The Brahmaputra river diverted to Pakistan, Afghanistan & Central Asia
The top of the Sutlej river (an Indus tributary) is quite high up, with lake Manasarovar in the Indus watershed at **4,590m**. Now about 400km east down the valley is Lake Paiku, (which is above Kathmandu and at **4,591m**. There is a hump of ~300m in between.
My point is that it is relatively easy to shift water here from the upper Brahmaputra into the Indus watershed.

We can also shift water from further east, like say at Nepal/Bhutan border where the elevation is 4000m. Here with get more tributaries flowing in, but the water is both further away and it must be raised more. Basically, if Brahmaputra water is going to be sent to Pakistan, it should be sent as early as possible as the river is both heading in the wrong direction and falling as it gets further away.

Water spilling into the desert
Above is the water from the Kaha river spilling out into the desert of western Pakistan. The mountains are to the left and the Indus valley to the right. The not-completely green area (the western 85% of the image) shows:
1/ The effect of trying to irrigate a slope, and how water dissipates.
2/ How water dissipates in the desert.
3/ The proper Irrigation to the right of the image (which is green) is irrigated with Indus river water.
4/ The image below is what the Tibetan rivers flowing into the Tarim basin do. (For example the: Keriya, Karakash, Yarkland, Kirzlesu, Kumerik, and Muzart.) In the image below of Hotan China, the northern rain shadow of Tibet still produces runoff. Here, there are several oases like Hotan in the Taklamakan desert where the slope flattens and people divert water for agriculture.

An Attock Fort dam to 380m up?
1/ Worry about about liquefaction in the Peshawar/ Mardan valley?
2/ It will be interesting to see when the last tsunami reached this far inland.

The Ganges and Brahmaputra electricity
1/ Here, with the Himalayas we have perhaps the world's greatest natural rain water catcher. And not only that, we have a huge source of fresh water, and one that come with lots of free gravity energy to help shift the water around.
2/ This Himalayan water will be an important resource during Ice ages, and a thing that must belong to all mankind in a crisis.
3/ Asia, land of cheap electricity: Much of Asia may not need to burn anything for energy

Khost valley
This valley gets lots of local runoff and seems easily dammed.

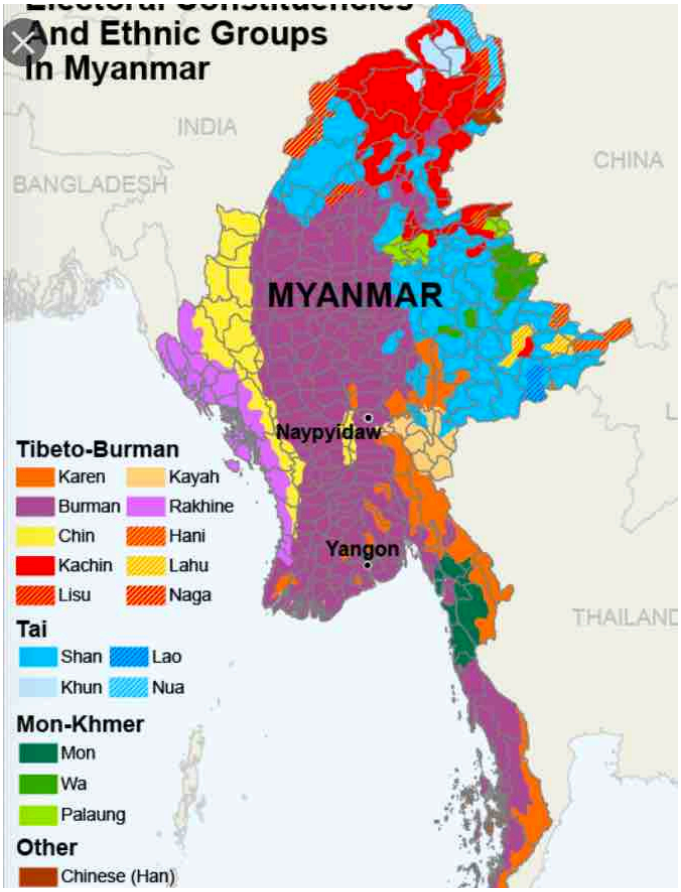
Sharan & Gazni valleys
The upper parts of these valleys are over 2000m and a a bit too high up. These valleys are probably our last choices for irrigation due to their altitude. Altitude is problematic because:
1/ We don't want to pump water uphill too far.
2/ Most plants don't like the thin cold air.

Damdam to Kandahar to Chaman
A number of these valleys will be stopped up and flooded with the water from a river above.

Burma/ Myanmar
There shall be 4 Burmas. These are highland areas each with some of the nearby lowlands only suitable for farming due to the tsunami risk.
1/ West Bama: West Burma mostly lives in the Alongtaw Kassapa ridge, which is east of the AH1 highway (Kalaymar)
2/ North Bama (Chinmar):
3/ East Bama (Shanmar):
4/ South Bama (Adamar):
X/ The North and West divide at Imphal. The North and East divide at Bhamo. The south divides at Kyaukkyi.

Burma/ Myanmar
1/ Burma will now have some of the cheapest electricity in the world due to all the nearby hydroelectric. Because the hillsides of the Burma valley are very long, the population shall be increased by 3X to 5X.
2/ The name of the nation shall be Bama after the main ethnicity of this nation (68%).
3/ The peacefulness and passivity of Burmese people is a thing fostered to help with the nation's exploitation.

Divert the Salween?
1/ There seems to be an oversupply of water from this inaccessible river. So due to our new system of water rights, Thailand may divert some of the water to from Hsuphang to Kan Me-kin (only about 30km down a flat valley). Then the water can irrigate northwest Thailand (like the Chiang Mail valley) and the nearby hills. The other parts of Thailand are better served by the Mekong.
2/ Perhaps we can find other uses for this water in east Burma and South Burma.



Or the tsunami map of Burma?
I don't know what history records for Burma. But I wouldn't necessarily believe it considering the tsunami lies in so many other places. • • • So when I look at an ethnic map of Burma, I see a map that looks a bit like the Wash zones of 2 mega-tsunami floods.
I imagine that the Chin of the western mountains, and the Ka•chin of the northern mountains were there first, along with the Karen. Their cultures learned the hard way (by tsunami experience) to stay in the hills. That is why they live in the hills here. Then the Shan came and settled in the empty area that the Chin/Kachin peoples didn't want. Then another tsunami apparently didn't go as far and left a layer of Shan. Then the Burmans came and settled in the death zone, the zone that has been hit twice by tsunami. They settled in the area where everyone's lines will eventually die if they keep living there.

Bangladesh has no high ground
Even Cambodia has some high ground. Surely we must give some high ground to Bangladesh.

The Arakan mountains partition
Bangladesh has 165 million people and no high ground. Burma has 54 million. East India has abut 50 million, of which over half are Muslim.

Arunachal Pradesh India = 1.7m
Assam India = 36m (12m are muslim)
Meghalaya India = 3.8m
Tripura India = 4.2m
Mizoram India = 1.3m
Manipur India = 3.1m
Nagaland India = 2.0m

Safe hills for Bangladesh
The following areas shall be given to Bangladesh, so the nation does not have to be exhoded to the world:
1/ All of the Indian state of Mizoram except Aizawl and Kolasib counties shall now be Bangladesh.
2/ The parts of Burma's Chin State that are more accessible, or potentially more accessible from the Bangladeshi side of the Arakan mountains than the Burmese side.
3/ The parts of Meghalaya south of Garobadha, Tura, Williamnagar, Shallang and Nongstoin, and also west of Nongstoin.
4/ The Majority Muslim parts of the Burmese state of Rakhine.

Laos
1/ We shall connect many of flattish areas in Laos via train, so they can support communities. Then the UM will set up townships sites and recoup its transportation system cost selling entitlements for township sites.
2/ The population of Laos may be increased to 70-million due to all the highlands areas available for townships.
3/ This nation is full of bright sunny tsunami safe tropical highlands. And while the nation is quite hilly, it is not mountainous, so it is easy to connect. So what the UM will do is connect all the dozens of flattish areas via train and then it will have many of places to sell lots.
4/ Pumping water up 600m hills for urban uses is one thing. Pumping it up 600m hills for non-container agriculture is an entirely different value proposition.
5/ Laos has a population of only 7.3 million people today.

Coastal hills
The people farming the fields in tsunami zones will live in the hills and take trains/ buses/ motorbikes to work.

Thai highway 108
This is the sort of place you should be living, not in the jaws of death where the features are all covered in sand from countless tsunamis.

Cambodia swap
1/ In Cambodia's northeast there is a high ground area. The Ban Renthuk, Ban Chom, Ban Onglouand, and Ban Pakha areas and all the portions of Laos south of Highway 11/ 18 and east of Sanamxai will now be given to Cambodia. In exchange Cambodia will give Laos an equal amount of flat land adjacent to the border near Siem Pang and Chunh as determined by the UM.

2/ The hills between Sa Thay and the Cambodian border will be given from Vietnam to Cambodia.
3/ Where Preah Monivong Bokor National Park is, there is a Manhattan sized mesa that is over 800m elevation. Let's draw a line between Snam Brampi and the where the Sre Ambel river crosses the 200m elevation mark. The portions of this mesa over 400m shall be given to Vietnam for evacuation purposes.

The golden delta
It is a golden delta, not a golden triangle. It is the mountainous area between Hanoi and Yangon and the narrow part of the Janisarit. Except for building on the hills, this seems a fine place for people to live.

China

China's main rivers in scale
Yangtze = 10.7 Niles
Pearl = 3.4 Niles
Yellow = 1.1 Niles
Heilongjiang = 3.8 Niles
Total = 19 Niles

China's #1 water problem
It is to move the Himalayan and other water to China's dryer areas where it will make a difference in food output. There should be 3 main strategies for this:
1/ Divert the Zangtze or Xi rivers north
2/ Divert Himalayan water into the Yellow river watershed.
3/ Divert water from the north into the desert.

Diverted into the upper Yellow river
There are certainly some small streams on the Tibetan plateau (like the Tongtien) that with a moderate amount of tunneling can be diverted into the water-starved Yangtze basin. Let's make a list of the reward and cost of these.

Xian and Pompey
There may be another "old•polis" under the silt. The famous terracotta Xian-buried-army looks like either a blid for a legend, or the product of a legend about great numbers of dead people buried in the silt. Notably, the Xian buried army is located to the east of the city. This location would block discussion of a flooded community under the Bahe river. Core drilling is called for here. This will be easy in the soft alluvial material.

A dry upper Yellow river
Perhaps all of the flow from the Datong and Yellow river should go in pipes, Then we will divert the river into a fan of hundreds of pipes. Also, instead of the Yellow river re-forming after the Ordos out of tributaries, perhaps all these will also get put in pipes, and the water used locally, or as far into the dry area as possible.

Is Xian City dangerous?
Most places can only be destroyed for one reason. Xian city and the indeed much of the valley can be destroyed for 4-reasons:
1/ It sits in a lake bed like Mexico City. This makes the earthquakes worse.
2/ If the rains fall in the wrong part of Tibet, your city might get flooded from the hills to the south. Look at the eroded alluvial soil directly south of the city.
3/ If the Yellow river watershed gets a torrential rainfall the city can flood for that reason.
4/ If the area to the west gets flooded, then the city can flood for that reason too.
X/ Xian is the devil's location for a city. If we move the city, we get a convenient location for storying a huge amount of water.

The Yangtze water north
At the 200m elevation level, near the first hills, we might divert the Han and much of the Yangtze north via great busses of pipes. This will run inland where the path is clear, but as close to the hills as possible. Maybe we zig zag a bit lifting the water 5m or 30m here and there take this water as far north as say Handan. Then most of it goes into the great burst lake of Xian. This should be salt free because it looks like a burst lake

New cities in the Xian area
On the way from Xian city to Yimazhen/Beihutong there is this tree of mesas that would make an good location for a city. This is up high at 800 to 1500m where it is cool and safe, and it is not in a lake bed. Farm the low lands and live in the highlands where it is safe, cool, and the air is fresher. Also there are many easy-to-use valleys radiating from this tree.

Xian: Yanan and Guzhoumao area
The places where the river/glacier valleys meet will have interchanges. These are in place like Luliang, Gaojia, Xijiecun, HuixiangTaiershang, Xiaoxitian. From these places people will take trains to their hill-town townships on land that would otherwise go unused. So vast amounts of safe clean hill-town housing land will be free.

Nice mesas to build on
Tujizhen/ Fengquizhen/ Yangquanzhen area and Guxianxiang. How many interchanges will go here?

Datong — This area will become China's main interchange city/area. This is up the hill from Beijing, where it is safe. This is the logical choice for China's main transport interchange (there is no longer a national capital per se.) Also a great number of people will move to the Shanxi-Hebei mountains, which will include parts of Inner Mongolia and Liaoning.

Jishi gorge water impounding dam(s)?

Divert the Tongtian (Jinsha) river into the Yellow river basin?

The Han partly diverted into Xian Reservoir
A Dam and a ~90km gravity tunnel from Lianghexhen might accomplish this for no energy. And tributaries downstream will replenish most of the Han river for downstream people. Is this a crazy distance for a water tunnel? Is it just too far? How much does the water cost on a 20-year payoff for the cost of the long tunnel?

Gotthard Base Tunnel as an aqueduct
The Swiss tunnel cost = $12.5-billion.
Annual water flow at 1m/sec would be 2.5-billion meters/yr. This comes to $0.25 per cubic meter of water over 20-years. The boring cost is doubtless much higher in Switzerland than China. If it is 10X higher, then tunnel water costs 2.5 cents per cubic meter.

Tunnels vs. desalination
I am going to say that desalination costs about $1.4 per cubic meter. This is higher than most estimates for large pants which run as low as $0.70. However I think that these are underestimates to encourage energy wasting desalination projects. I am betting that maintenance and transfer costs are ignored. If you want to use $0.70 instead of $1.40, it is an easy conversion.

Tunnels take time
The 57km Swiss tunnel above was drilled at a rate of ~9m/day. So a 100km tunnel, at this rate would take over 30-years to complete. And a 200km tunnel would take 60 years. However, we might make our aqueduct tunnels in segments, using vertical shafts at intervals for lowering equipment.

Bogus knowledge about tunnels and desalination
Our efforts to build both the Panama Canal and the Suez Canal were sabotaged. It is just a hunch, but I bet our efforts at both tunnels and desalination were similarly sabotaged.

Use the Yangtse water inland
The Yangtse is China's #1 water resource, it is 10.7 Niles for the interior of China.

The energy to connect the Yangtze to the Xian reservoir
This is ~800km of distance and a rise of ~150 ft. Maybe we can ultimately capture half of the Yangtze's upstream gravity energy and use the electricity to pump a huge amount of water into the Xian basin.

New safe China
There are lots of places to build townships that are high up. Maybe we put:
1/ 200 million people in the Sichuan basin, Hanzhong area
2/ 200 million in the Kunming, Guiyang, Zhangjiajie area.
3/ 200 million in the Xian basin and parts north and west
4/ 200 million in Shanxi, etc.

The Sichuan basin
1/ There are a number of rivers flowing into the basin from the north. Can any of these be diverted into Lake Xian?
2/ There are 8 or more long relatively smooth ridges northeast, east and southeast of Chongqing. I imagine a grid of interchanges in the valleys and hundreds and hundreds of townships on multi-lines in the hills. These have mostly flat winding "topo line" roads at the lower levels and covered escalators to the higher areas, Hong Kong style at each stop. The grid is at roughly 60° to North-south like the ridges.

Aksi Chin shall become a UM territory
This is a small disputed piece of high mountain wasteland on the border of India, China, Pakistan and Tibet. It is about 200km across and has elevations of over 5,000m (16,500-ft.) A couple decades before China seized Tibet, it seized this largely uninhabited area.

Aksi Chin approaches worthlessness due to its isolation and high altitude. However, today there are about 10,000 Chinese living in Aksi Chin. These are supposed to maintain China's rights to this land. At least that seems to be the plan. But I don't buy it. It isn't enough people to matter. And China is obviously making another of many land grabs here. So I say that Aksi Chin and its valuable runoff water shall belong to the UM because nobody is really living in the place, and because we want to eliminate this place as kindling for another war between China and India. So Aksi Chin becomes a UM place where nobody gets to interfere with the water runoff.

Xinjiang majority Muslim prefectures
Asku = 76% Muslim (2.6 million)
Hotan = 96% Muslim (2.5 million)
Kashgar = 91% Muslim. (4.5 million)
Kizlesu = 65% Muslim. (0.6 million)
Total = 87% Muslim
Total population 10.2 million

Xin Jiang
1/ Asku, Hotan, Kashgar, and Kizlesu provinces being 87% Muslim and on China's border, these Xin Jiang provinces shall now be an independent nation, totally independent from China.
2/ All Muslims in other parts of Xin Jiang and western China shall have the right to emigrate to Xin Jiang,

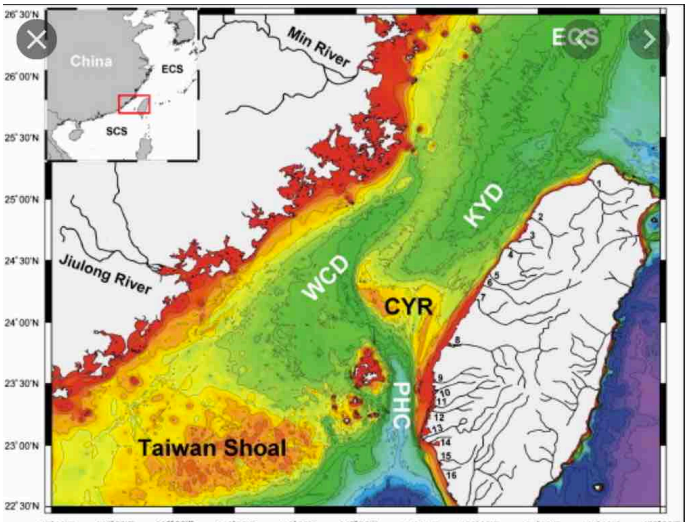
however each household must pay an 80% tax on their assets over 3 year's pay as an emigration tax.
3/ This right of emigration also applies to all Xinjiang Muslims that are incarcerated or on probation, except that these shall be transferred to the authorities of Xin Jiang.
4/ The people of Xin Jiang shall treat the Chinese people living in their lands as equals under the law. Likewise, China shall not treat the people of Xin Jiang as second class citizens.

India and China may protect their trade routes
The UM shall generally be responsible for protecting world overland trade routes from those who would sphinx them. However as a backup, we shall say that if anyone interrupts India's trade routes through Iran, Afghanistan, Iran, Turkmenistan, Uzbekistan, Kazakhstan, Russia, Ukraine, or the Mideast, India shall have the right to deploy its military to protect the nation's vital trade interests. Likewise if anyone interrupts China's trade routes, China may deploy its military to protect the nation's vital interests. Likewise if anyone interrupts America's trade through central America, the various American nations may deploy their military to protect their nation's vital interests.

China's land grabs, China's darkness
I presume it is true — it might not be — but supposedly China has obliterated a number of ancient Uighur cemeteries. If this is true then we see something. We see China trying to destroy evidence that contradicts their claims to this land.
1/ We hear about this happening in Tibet. Basically every shred of the culture that survives is evidence against China's occupation. And this particularly with the oldest and most important cultural treasures — because these contradict China's claims with the greatest force. So China goes out of its way to destroy all this evidence.
2/ Behold darkness spreading. Behold the black in the panda's coat. And the white part is sunlight and truth and honesty and openness, especially in the group decisions of your people. What you have done destroying Uighur cemeteries is darkness. Pure evil darkness.
3/ Where else are nations destroying a culture, or killing, or driving off the people who live there to appropriate some nearby "underused" land? Here we understand something about Ishtar in general.
4/ In every nation on earth, what is the default judgement in similar court cases? What happens when a neighbor moves boundary rocks, or someone has tampered with the recorder's books? How does the court do with the fence moving neighbors? In every nation on earth, doesn't the court dis-favor the grabbing neighbor?
5/ Do we favor or disfavor the evidence destroyer? What about when the evidence is also archeologically significant?
6/ This is not developers. This is the China Government trying to cement a claim to some land that other people already live in.
7/ This "Darkness" is part of the "Black" in the black & white coat of the panda, symbol of China. The panda shows you when China's behavior is Black and evil.
8/ There is way too much Darkness in China. You should all be more loyal to Light and truth, Stand up for what is real and right and light and fight what is fake and wrong and dark and obscure. And especially abhor mystery and trust in matters of group decisions and group knowledge.

Taiwan reunification and geology
Apparently Taiwan was underpopulated because tsunamis repeatedly washed away the settlers. And the government and the famous wise men were all in Dark mode.
1/ The lowlands are all tsunami vulnerable due to a 3:1 or 4:1 funnel. Also the hills are particularly steep, and mostly without flat areas. Maybe many Taiwanese can move to Nantou, or even the higher ground around Taipei. But the safe accessible parts of the Island of Taiwan are quite limited.
2/ Funneled tsunamis appear to be possible from a variety of sources.
3/ The plate snaps, slips and then grabs under a stationary continental plate. So the earthquakes are particularly powerful like those in Japan, Philippines, and the Pacific plate portion of California.
4/ It is an inconvenient island.
X/ Some Taiwanese will move to third countries, some will stay put. However most will probably eventually move to

China once it institutes my democracy reforms completely.
XX/ Taipei and Taoyuan City are rather like San Diego bay and Mission Bay. The incoming tsunami water cuts a canal on one side and fills the other side with debris. There is also a river that is flowing into the canal side, just as it originally was with San Diego. The river brings the material, the tsunamis shifts it around before it is washed into the seafloor.



Taiwan tsunami flows
1/ The tsunami erosion is evident from the seafloor topology above. See the PHC channel, and near Taipei in the north.
2/ There is much more tsunami action from the south and east. But the flows do wrap around Taiwan as they wrapped around Sri Lanka in 2004.
3/ There is extreme flow around the PHC channel.
4/ The PHC flow is focused on Xiamen and Quanzhou.
5/ We can see the way northbound tsunami flows have been shaped by the coast and the increased flow has eroded a channel between the shore and
the Taiwan shoal. So there is a great deal of water flowing past Fuzhou and Taipei as well.
6/ Tsunamis from the north and east caused the undersea tsunami divot to the north of Taipei. Either that or Taiwan's movement to the north.

The Bearing straight by boat
We shall build port facilities in Loop lagoon in Alaska, and Uelen/ Inchoun in Asia. Thus the boats only have to make a ~100km trip between the rail heads in North America and Asia.

The new nation of East Russia
All parts of Russia east of the OB river shall now be a new UM settlement nation. Mongolia with only 3-million people and more importantly only 2 people per square km shall also be part of this new UM nation.

New Guinea
This island can house about 50 million more people. The highlands are quite high and should have a Tahiti-like climate.

The new nation of Darwin
1/ We shall build facilities for moving water from the higher rainfall areas of Australia's tropical north to the nearby lower rainfall areas of Australia's tropical north.
2/ All of Northern Australia has a population of 250,000. And Western Australia outside of the Perth has far less. We shall draw an east/west line from 40km north of the center of Alice springs And we shall draw a north/south line from 40km west of Mount Isa. This shall be the new nation of Darwin. Australia retains all mineral rights for all operating mining facilities.

Immigration and colonies
The North Americans give up north Canada, the South Americans give up the Amazon and Orinoco basins, the Russians give up East Russia, The Australians give up Northern Australia, India opens up its West, And we have several areas in Africa and much of Indonesia open for people to relocate to.

All these new nations shall be the colonies of the nation(s) that gave their territory up for settlement by foreigners. These nations shall administer the colonization until half of the people in the colony are native born citizens of the place. Then the new nation shall automatically gain its autonomy.

China's right to unclaimed water
So long as Janisarit rivers are being wasted and China is using all of its Yangtze water, then China will have the right to collect wasted water as is every nation's right.

A multi-team competition
Many of the world's nations will have a pipe hydroelectric industry and their own patch of watershed. It is better this way. Corruption gets harder if we have the various nations competing to be effective and inexpensive.

300km tunnels?
Can we drill tunnels this long? I see rates of boring at between 1.5km and 11km per year on the internet. Can we start in multiple locations along the way via vertical shafts? If we can drill these tunnels, then there is no energy used to move water from the Janisar to the dry areas north of the Himalaya. Then we can move much more water to the world's deserts. Will this work? Is it worth the cost?

Tall aqueducts through mountains

1/ / What if we drilled a 4-m hole and then ran ran gangs of diamond saws on the bottom half and then broke the resulting sheets off? What if our gang saws each cut diagonally so that

1-story down, the cut is 6-m wide and
2-stories down, the cut is 8-m wide and
5-stories down, the cut is 14-m wide and
10-stories down, the cut is 24m wide.
15-stories down, the cut is 34m wide.
20-stories down the cut is 44m wide

Then we would have an isosceles triangle tunnel that is effectively 21-stories tall or 63m tall and 44-m across, or 1,400m per second, or half a Nile of water. And the Nile currently supports 250-million people.

Danube river aqueducts

As is the universal right of all nations, Turkey and Greece shall be permitted to build aqueducts to take excess water from the Danube river to their land via Romania and Bulgaria. Also, if they build as far as Aytos Bulgaria, the UM shall build the final part north of Aytos to the Danube. The two nations must however pay for their own water pumping, and this must be feasible.

Europe's southern borders

1/ Europe shall have a border zone west of Istanbul, on the western side of the Hellespont at the Durugol line. All parts of Turkey in Thrace and west of this point shall be ceded to Greece.
2/ The border and passport control shall be at the line connecting Durugol lagoon to Buyukcekmece lagoon. The outlet of the Durugol lagoon into the Black Sea shall be dredged to create a 1,000m wide moat. The outlet of the Buyukcekmece lagoon into the Sea of Marmara shall be dredged to within 20meters of the D569 highway. All west bound lanes on the E5 highway shall be permanently closed and repurposed for eastbound traffic only at the Buyukcekmece lagoon crossing. This is to create a moat.
3/ The Durugol line shall have three 10-meter walls of different construction, all thickly topped with concertina wire. There shall be 1-km between the three walls creating a 2-km defoliated border zone. The European border patrol forces shall live and work between the eastern two walls. The Greek border patrol forces shall live and work between the two western walls.
4/ Another triple 10-meter border wall shall be built at the base of the Gallipoli peninsula and operated in a similar way.
5/ The current residents of the Hellespont/Thrace area ceded back to Greece shall continue to own and use their properties until 2050.01.01. They may also sell their property for what they can get. However, no new Turks or other Ishtarians shall be allowed to buy property or move to this location. Only non-Ishtarians shall be allowed to move to this dumb place to live, this fault line in a tiny sea.
6/ All passengers arriving from the Mediterranean to continental Europe shall be required to cross immigration control as if they were arriving from a foreign nation. This includes all European territory in Africa and all islands in the Mediterranean, such as Mallorca, Sardinia, Corsica, Sicily, Crete, Elba. It also includes the Peloponnese.
7/ Europe shall have internal borders at Corinth Greece, and a line connecting Trebisacce, and the Campotenese/ Mormanno area in Italy.
8/ As a matter of development aid to neighbors, European shall provide bridge-ferry service for freight and passengers between Ceuta and Algeciras (Al Jazeera, the base in Spain) at no charge. Non-citizens arriving in Europe more than once per year must pay one day's wages each upon arrival to discourage commuting foreign workers.

Arabian peninsula evacuated

The Arabian peninsula shall be evacuated.
This includes the Persian Gulf tsunami zone up to the Zagros mountains and all parts south of a line connecting Aleppo and Erbil, The only exceptions to the evacuation are:
1/ Day farmers
2/ A reasonable number of people working in mineral extraction.
2/ Up to 3,000 archeologists approved by the UM.
3/ Tourists and half-year-max tourist facility workers.
4/ Everyone working in the Arabian peninsula must keep another home somewhere else, and they must also spend no more than 120 days per year in the Arabian zone which will be otherwise totally evacuated.

The Tigris and Euphrates

1/ With desert rivers, we want to use the precious desert water as far upstream as practical because less water is lost to evaporation and seepage. Also with many deserts, the hills are relatively salt-free, while the areas near the end of the river tend to have salt issues.Therefore the Euphrates/Kabur river should be maximally impounded and used in Turkey
2/ We don't want people living in either the tsunami zone, or the total Arabian desert. People can however commute to tend crops, and work in mineral extraction and archeology, but they can't stay over night or work indoors there.

The Volga = 3 Niles

1/ The UM shall construct aqueducts to divert some of Volga's water to the Ural river and areas to the east and south. Towards West Kazakhstan, and Aktobe provinces of Kazakhstan. Perhaps this aqueduct will run from Samara to Uralsk.
2/ Most of the diverted water will be used to irrigate the dry lands to the north of the Caspian sea. Some emergency water may be sent at times to as far as Rasht Iran.

3/ As is usual, except in drought/famine emergencies, water normally may only be sent/moved if the cost of the energy to pump/move the water is less than say 1/4 or 1/2 the value of the crops the water is growing.

Caucus rivers
The UM shall build pipe hydro projects for the Caucus mountains including the Aras, Terek and Rioni rivers. And while the UM will construct an aqueduct system for the area that is capable of diverting some of the Volga's water to Azerbaijan, Iran, Armenia, etc., nearly all of the water that is sent there will come from the Caucus rivers. This is due to the energy needed to move the water from the Volga such a great distance, and the mountainous terrain starting around Parsibad. Thus very little Volga water will actually be sent to Iran. Only perhaps emergency residential water during drought years.

Turkey
1/ There shall be a new rail interchange east of Gaziantep and mostly west of Batman, with the commercial/ work areas in the south near Ain Issa. This stop shall be called "New Issa". This shall be a main interchange for where the routes come together from Africa, Europe and India via south Iran.
2/ There shall be a Hormuz rail line from New Issa to India. This line runs down the coast of the Persian Gulf and Gulf of Oman to India
3/ There shall be a new rail line through north Turkey connecting Istanbul to Georgia and Azerbaijan. This will give the world another redundant connection between Europe and the Asia, another connection that is important because it avoids the Iran/ Afghanistan area. This shall follow the E80 highway route from Istanbul near Bolu, Tosya, Niksar, Erzincan, and Erzurum. From here the route splits, with one route going roughly via the D965 route to near Kars and near Tbilisi to connect with the Axis line near Shirvan, Azerbaijan. The other route follows the E80 past Agri and roughly through the Aras river valley to the Caspian sea coast. There is another route that runs roughly along the D950 highway route to connect the main east/west route to the New Issa city. This is in addition to the route in the west of Turkey that connects Istanbul with New Issa.
4/ Great numbers of Exhods shall be resettled Turkey.

The Persian line
1/ New Issa, Turkey
2/ Near Kiziltepe, Turkey
3/ Near Erbil, Iraq
4/ Near Dezful, Iran
5/ Near Hormuz
6/ Gwadar
6/ Noori Abad (Hyderabad)
7/ Raniwara, India

Regionalized water
The world is always experiencing droughts here and there. Better that nations share their water around, and with much less regard to national borders.

Standardized pipe hydro-electric
What if we came up with this totally engineered, tested, re-optimized, standards for our pipes and our 2m, 3m, 4m, 5m generators, pumps, the support columns, the bridges, everything is this world standard. And there are hundreds of companies around the world making this stuff and installing it.

Hydro-generator efficiency competition
It is real simple. Equal sized pipes with equal flows. Which one makes more current?

Who builds the pipe hydro
Pakistan, India, China, Germany, the US, and Brazil will probably have big pipe hydro industries. It is easy to imagine the US or Germany or Japan competing for market share in the generator industry.

Maybe Thailand and Vietnam will use a foreign general contractor. Or maybe they will buy only the generators and high pressure segments. Or maybe they will enter the industry.

Who pays-for and owns the pipe hydro?
1/ In Canada, the US, Mexico, Australia, Japan, and Spain, the facilities should be owned and run by the individual nations because there is no question about division of the resources. In Africa there must be one UM managed system because there isn't enough high water to power all the water movement needed. With India, Pakistan, and Bangladesh, the three nations need to cooperate as one so that the water and electricity can be used to increase would output. The nations of Europe can manage their own water facilities. Outside of these nations, the UM shall pay-for and run all of the new pipe hydro projects and apportion the benefits based on population.
2/ The Janisarit area will have the world's greatest overabundance of energy. So much of the world's energy intense industry will occur nearby. This cheap energy is much more of a plus than the hilly terrain is a minus.
3/ The UM shall have the right in case of volcano-driven climate emergencies (and only in this circumstance) to divert water to where it will produce the most sustenance for mankind.

Yarkland/ Hotan river agriculture
1/ Google satellite images clearly shows how the water is running off and being wasted in the desert.
2/ The bigger the mountains the bigger the rain shadow. Right? Here are people farming the middle of the Himalayan rain shadow.

Island = Iso•land?
equal•land, a place where all men are created equally. How long, how many times, must we watch knowledge get obliterated by the forces of darkness and those who favor them. Athenian Iso•cracy ran and Iso•land, a land where all men are created equal. Look at how that was buried, and how Iceland is an island in the northwest. How many times will we all try to be free and fail? Can we just try to end the darkness and make it work this time?

The evacuation area
It is easy to look at a satellite map and see the Mideast wasteland places that need to be evacuated. They are all desert colored and not at all green. They are the Dry part of North Africa, Arabia, Iran and perhaps central Asia. They are all deserts or other places that can't sustain people. For Arabia, the evacuation area shall explicitly include all portions of Syria, Lebanon, Jordan, Israel, Palestine, Iraq, Kuwait, Saudi Arabia and all the nations at the end of the Arabian peninsula. The tsunami safe mountain areas of Iraq and Syria that will have access to enough water may remain occupied.

The Mideast plan
1/ Kurdistan: The contiguous Kurdish majority areas in Turkey, Iraq, Iran, Syria, and Armenia that are directly on the border with Kurdistan shall become the nation of Kurdistan. The other majority Kurdish enclaves in these nations that are not contiguous with the border shall remain the territory of these nations. For example the Kurdish enclave south of Ankara shall remain Turkish.

Now because this plan gives the Kurds their own nation without a great war, all Kurds shall owe a debt of gratitude to this plan throughout their generations. From now, all Kurdish enclave people shall live in peace, and fully submit their host nations, or they must sell their home and move to Kurdistan.
2/ Arabia: All portions of Arabia shall be depopulated and relocated. The depopulated areas include Saudi Arabia, Kuwait, Bahrain, Qatar, UAE, Oman, Yemen, Jordan, Israel, Lebanon, most of Iraq, and most of Syria.
3/ Iran's empire no more: Iran shall cease to exist as an empire:
a/ The Azeri majority areas of northern Iran shall become Azerbaijan.
b/ The Kurdish majority areas of western Iran (but only in western Iran touching the border) shall become Kurdistan.
c/ The majority Baluchi portions of eastern Iran shall be combined with parts the Baluchi parts of Pakistan and Afghanistan and become the nation of Baluchistan. Now because this plan gives the Baluchis their own independent nation without a great war, all Baluchis shall owe a debt of gratitude to this plan throughout their generations. All Baluchis enclave people shall live in peace, and fully submit their host nations, or they must move to Baluchistan.
d/ The Turkmen majority areas of northeast Iran shall become part of Turkmenistan.
e/ The Lur majority areas may have their own nation as well.
f/ The Persian area at the end of the Persian Gulf created by this plan shall be exhoded because it is a tsunami death trap.
g/ The remaining nation shall be called Persia.
h/ No enclaves shall be created, such as might perhaps otherwise occur in or near Karaj. This rule shall hold with all the national partition plans herein.
i/ The low lying oil rich areas at the end of the Persian Gulf that are currently Iran shall, like all of Arabia become an uninhabited UM territory. These areas shall be resource surveyed and exploited by the UM for the benefit of all mankind.
j/ All of former Iran must declare and give up all of their nuclear and WMD programs and allow the facilities to be destroyed by the UM.
4/ Pashtunistan: The portions of Pakistan and Afghanistan that are majority Pastun, and not enclaves in other nations shall become Pashtunistan. This includes the Tajik and other enclaves near Shara, Lashkar Gah, Zaranj, Farah, Shindand, Harat, and Qala-i-Naw. This also includes the Tajik, Uzbek and Aimak enclaves near Herat, as well as Kabul. Because this plan gives the Pashtuns their own independent nation without a great war, all Pashtuns shall owe a debt of gratitude to this plan throughout their generations. All Pashtuns enclave people shall live in peace, and fully submit their host nations, or they must move to Pashtunistan.
5/ Pakistan: A large unified Pakistan is no longer needed as a menacing edge for Islam against India. In fact, now you are all supposed to be at peace with the world, right? So we are going to break up Pakistan. And this will be perhaps the most important olive branch that can be given to the people of India. This will make all of India much warmer and and friendlier to the fall of Islam and the idea Muslims living peacefully in India. So Pakistan shall become at least 4 nations: Baluchistan (including parts of Iran and a bit of Afghanistan), Pashtunistan (including parts of Afghanistan), Sindistan, and Punjabistan — and all the lines get drawn by ethnic majority (The Baloch enclave in Sindhistan will be Sindistan). Punjabistan shall vote on a break up along ethnic borders into up to 6 nations.
The Northern part of Pakistan around Gilgit shall also be a separate nation, along with the muslim parts of India, call that nation Gilgistan. The scarce (but now increased) water resources of the Indus river shall be shared among the new nations of former Pakistan according to 1980 population, and as apportioned and monitored by the UM.
6/ Turkmenistan: All the majority Turkmen areas in Afghanistan contiguous with the border with Turkmenistan shall become part of Turkmenistan.

7/ Uzbekistan: All the majority Uzbek areas in Afghanistan contiguous with the border with Uzbekistan shall be become Uzbekistan.
8/ Tajikistan: The majority Tajik, Pamiri, and Nuristani areas in Afghanistan contiguous with the border of Tajikistan shall become part of Tajikistan.
9/ Kyrgyzstan: The Kyrgyz areas in Afghanistan contiguous with the border with Kyrgyzstan shall be become part of with Kyrgyzstan.
10/ Hazarastan: The majority Hazara areas in Afghanistan shall become Hazarastan and Afghanistan shall thus have no land, and it shall thus cease to exist.
11/ All shall now live in peace: They shall be friends with their neighbors and with the world out of respect for the plan that either moved them or unified their nation and brought more water to their various nations.
12/ Nagorno-Karabakh:
a/ The Nagorno-Karabakh autonomous zone shall lose the areas directly on the borders with Azerbaijan and Iran that are majority Azeri. These areas shall become Azerbaijan. The Nagorno-Karabakh autonomous zone and Armenia shall shall likewise gain all the majority Armenian areas that are directly on the borders with Azerbaijan and Iran.
b/ Azerbaijan's Nakhchivan zone will no longer be an enclave due to the dissolution of the Persian empire.
c/ The areas between Nagorno and Armenia that are mostly deserted shall remain Armenian except the majority Azeri communities on the border with Azerbaijan.
13/ Acceptance:
The acceptance of this new border plan is required in each nation mentioned above for construction of the UM rail and aqueduct plans, and the beginning of the exhodos process if applicable.

Georgians, Armenians, and Azeris
The small majority Armenia portion of southern Georgia shall become part of Armenia. The small Azeri portion of southern Georgia shall become part of Azerbaijan. The small Azeri majority portions of Armenia on the eastern border (west of lake Sevan) shall become Azerbaijan.

Centrograd, Bramagrad, and Gagarin
The main trading city of the Old World near Volgograd shall be called Centrograd. The city at the south end of the Ural mountains where the India line comes in will be called Bramagrad because it is the gateway to India. The gateway city at the east end of Kazakhstan, where the line to Tashkent connects will be called Gagarin in honor of the first man in space.

Bramagrad
1/ There is a natural location for a stop where the Bramagrad train (which runs north/south between the Caspian and Aral seas from Serder) joins the "Oriental" or orienting main east/west lines. This is probably closer to Ural town than to Aktobe city.
2/ If much of Russia suddenly wants to live a little higher up, the southern Ural foothills might be a good location. The north Slope of the Caucus mountains are another spot. The hills south of Biysk are another highland spot.

Interchange cities
1/ They shall be oversized by design and have an oversupply of planned lots. This is because the primary goal is not local transit efficiency, but having enough decentralized land that nobody can ever monopolize or even gain an economic high ground.
2/ The land in all UM cities is owned by the UM and rented for no longer than 20-years.
3/ The UM cities will generate huge amounts from rent.

UM cities and land rights
1/ The land in all UM cities is owned by the UM and rented for no longer than 25-years. The shorter land leases of the UM cities are an important aspect, and a tax on permanent settlement. This is intended to keep these cities from silting up with unproductive people. Thus the UM cities will be more like London, New York, San Francisco, Singapore, and the other cities where people go to "make it financially", except that they will mostly all go back home when they retire young. Also:
1/ There is far less risk of tsunami in all new UM cities than in New York
2/ Nobody living in UM city is a citizen.
3/ The shorter lease terms only applies to the metropolitan areas of our UM interchange cities, and not the outlying areas where there is land for large new nation. Settlement in areas more than say 100km from the interchange will have typical long-term leases. Also, for Centrograd this distance might be even a 250km radius, while for Bereket, it might be only 50km.

UM cities and workers from poor nations
1/ The long term rentals of the UM cities will work in a market economy. However about 6% of the people will be housed in shared 5-person 40m dorm rooms with maybe 8 rooms sharing kitchen and bath facilities. These will be provided rent free for up to 12-months to people from the poorest 2/3 of the world.
2/ The people from the poor nations will only be able to stay for a limited number of years. This will be a short period to start, and over the years, the period will get longer. The short period is so that there is room for other poor people to come and work hard and make some scratch capital and then go back home.
3/ There will be no income taxes in our new world, so it will be easier to go and save money.
4/ When nations send people who are later convicted of crimes, each conviction shall count against future slots for that nation by a multiplier of up to 10X, depending on the severity of the crime. This is so the various poor nations are careful abut vetting their workers.

Two sets of train lines
1/ We should build at least two main east/west lines through Kazakhstan, Russia, Ukraine, Belarus, Poland and Romania. This is in addition to the lines through Pakistan/Iran and Iran/Azerbeijan.
2/ Two rail lines are more than twice as hard to close with terrorism for profit.
3/ These parallel rail lines should be separated by hundreds of kilometers.
4/ Perhaps Centrograd and Bramagrad and Gagarin are each 200km across and the metropolises are between the rail lines.
5/ The more the lines are close to lots of people, the harder they become to attack and interrupt.

International access
1/ All nations shall have an easement to construct needed sealed viaducts and utility lines through their neighbor's territory to connect to unused water resources and the UM rail system.
2/ Except where allocative pricing must be used due to high traffic, all UM railcar towage fees must be charged at a uniform per-km rate throughout the system of each continent. These fees shall only be enough to keep the built system going and shall not involve any money to repay build-out costs or pay any profit.
3/ Railcars worldwide must meet uniform standards and be regularly inspected to be used on the system. The top parts and interiors of the rail-busses and rail-trucks may vary considerably.
4/ To reduce traffic, government may establish minimum average passenger counts per railcar.
5/ Government shall not limit the number of enterprises competing to offer their fancy railcars.
6/ Each nation shall be allowed to regulate its own imports from the UM rail system. However, no nation may in any way interfere with the transportation of goods through their territory.

Sakartvelo = Gorgia
In English, the nation Georgia should be spelled and pronounced differently so it is distinct from the US State as a search word. I recommend Gorgia, pronounced as gorge•A in English. Also, in English, the English speaking state with 10.6 million people gets priority over the foreign nation with 3.7 million people.

The UM shall now own all Mideast oil
The Mideast don't have enough to buy their complete ex-hodos and way out. So it is an impossibility that it keeps the oil fields as property through its bankruptcy, liquidation and ex-hodos. Besides, it will be centuries before oil is as valuable as it is now. So now is the time to get out of oil completely and help the world find alternatives such as pipe hydro-electric, low energy use transit systems, and super well-insulated buildings.

Badlands people
It's a very important thing economically, this ability of land to support the people living on it. If you don't have this, you have the opposite of a place that brings profit. Instead, your community economy must constantly pour out money for imported (brought in) food and necessities. So the community is always bleeding money. And it will always eventually become economically untenable if not for Ishtar, or some other means of gaining money to trade for food. So if we want to kill Ishtar, we have to eliminate the desperation. Because if we don't eliminate the desperation, as surely as night follows day, Ishtar or something like it will just re-form in these places out of the desperation. This is why I call for the complete exhodos of the untenable wastelands of North Africa, the Mideast and Central Asia.

Where we let people decide to stay
If we can provide irrigation water to grow things for the cost of building aqueducts and little or no net energy inputs, then we can let breeding age people decide whether to continue to live in that wasteland. Here I am thinking of the Atlas mountains, and the mountains between Iran and Iraq. And here, in this sort of place, the economy must be based on real industry or real agriculture. It cannot be based on desperation, deceptions, gifts, and obligations.

Aqueducts are cheaper than housing
This is certainly true when the aqueducts are short.

Aqueducts are needed for food security
We should have these large irrigation-based agricultural areas on the various continents. Then if water gets very scarce, we can focus it where we are already all set up for dry farming.

Why people will stay
1/ They are no longer breeding age and they want to stay.
2/ There will be no transition culturally.
3/ They will get to stay with their extended family and old friends.
4/ There is no mandatory education and camp life.
5/ It is easier if you don't have to start over again.

Exceptions to the exhod evacuation
The people working in agriculture, mineral extraction, archeology, and tourism may stay in child-less facilities lodging bunks provided they have a home in another place and they do not spend more than half the days of the year in the exhod area. Also, the people of the Zagros/Kurdish/Turkish mountains might commute in busses to farms and oil fields in Iraq and around the Persian gulf.

Tarim Basin water
1/ A gravity aqueduct shall be constructed from the mouth of the Keriya river (2200m) to the Wuluke river and the Yarkland oasis (~1250m). This will take all the agricultural and runoff water from all the rivers along the way, but leave these communities with enough water for uses related to cities, industry, and parks. This is done because the utility of this scarce desert water will be multiplied if it is used in a single larger oasis with a limited periphery.
2/ No other nation shall take more than 5% of the monthly flow of water from the watershed of the the following rivers flowing from Tibet to the north, and into the Tarim Basin: Gaizi, Hantie Reke/Kusan Daliya,Yarkland, Tizinafu, Wuluke, Sangzhu Daliya, Karakash, White Jade, Cele, Keriya rivers and all the seasonal streams in between.

World soil and ground water survey
The UM shall regularly survey the entire world for the quantity of groundwater and average soil thickness. This shall also include nutrition categories for the soil.

Let's find all our groundwater reservoirs
Pashtunistan, Morocco, and Iran among so many other nations should all quantify and rank their potential ground water sources and storage locations. Do a fast and quick survey. Then once this is done, come back and do a detailed survey of all the promising sites.

Central Asia's undeveloped rivers
Kazakhstan has 18 million people and 7 rivers (Ural, Uil, Ishim, Eralis, ili, Shu, Syr Dara'ya). And Turkmenistan has the rather large Amu Darya. Why isn't this water used better? Why not use pipe hydro-electric to increase and better distribute the water supply to more of the desert?

Turfan tunnels
This is where we tunnel almost horizontally into the base of a hill and let the ground water flow out. We should drill and survey all the major valley bottoms of our mountain watersheds flowing into dry areas. Let's do this worldwide. Then where we can we will dig more turfans and intercept more fresh water flowing underground into the ocean and currently being wasted.

What is the Amu Darya?
Firstly, this river has about 68% of the Nile's flow, so this is a huge source of fresh water in the middle of a great desert.

But the river seem to be coming out Tajikistan's dry-side Janisarit formation. What percent is runoff and what percent ground water? How is the ground water situation? How long does it take to get through? Can we open turfans and increase the flow of water that makes it out onto the surface, before disappearing again subsurface into the Aral sea? Why not flow the water onto the surface?

Open Turfans into the Yellow river?
We should drill and see if this is possible on the Himalayan plateau.

From Lake Baykal to the Caspian Sea
There are about 15 or 20 large bodies of water. Is this due to a rift?

Issyk Kul lake
1/ Is this an example of Himalayan janisarit flows that are trapped instead of flowing into the Aral sea?
2/ Maybe we should be opening the water table with Turfans in more Himalayan slopes where we can tap some water out to the surface.
3/ Maybe we should be looking for where our lakes leak and trying to dam or patch them.
4/ Most ground water is just spilling into the ocean, or in Central Asia, the Caspian sea.

Almaty needs to change its name
It is not acceptable to have a city named "The killers".

Yarkland projects
1/ The shallow slope and narrow glacial valleys of the Yarkland makes it ideal for a series of impounding dams.
2/ There needs to be pipes to shift the water over to the plantint area.
3/ We should be looking for turfans to increase the flow of this otherwise wasted runoff water source.
X/ This underground river sort of groundwater is fine to use. It is like river water flowing into the ocean. If we don't use it, then it just goes to waste

The Turpan/Turban depression
1/ It is peculiar, and the topographic information is hidden on Google maps and the internet.
2/ Why isn't it totally salty? How come people are able to grow things in this below sea level lake?
3/ The below sea level ground water that is released by the turpan cuts. Where does is it running to? Does it leak into a rift valley? Are there caves?
4/ Perhaps there are magic places around the world where we can let sea water in and then it comes up as steam that builds into a fresh lake. Perhaps we can cleanse the surface of salt water contamination in this way in some places.

Samarkand & Dushanbe
Let's try to stop the water of the Amu Darya and Dyr Darya with a ground dam at either maybe the Ashgabat, or Zarafshan line, or maybe the barrier goes on the Bukhara to Mary line (There is a former Christian town named Mary). Or maybe it is a wavy line somewhere else. Where does the soil get especially salty? Where

does the saltiness spike due to being an accumulation basin? and where is the salt low? Also, where is the ground mostly waterproof to below?

4-corners Asia
This is about the mountains of the 4-way intersection of China, Mongolia, Kazakhstan and Russia:
1/ The Bukhtarma, Katun, Yenisei and Khemchik river valleys could each house tens of millions of people.
2/ Kosh-Agach is another good place for a new city.
3/ There are so many places that are not vulnerable to tsunamis or floods here. Why have cities located like Kashgar and Xian located right below an obvious river flood zone?

Possible new mountain passes in Central asia
1/ The Muzart river glacial valley should connect Aksu with Xiatexiang. There is a 3km tunnel at the top.
2/ There should be a road from Gongliu to Kurecun to Bayingol.
3/ Almaty should connect to Prokhodnioye Ushchel'ye road via 5km tunnel.
4/ Prokhodnioye Ushchel'ye road connects with Shilik river valley and the P-16 highway to the east.
5/ Tekeli Via Krka Kora valley and two tunnels to WenQuan.
6/ Pokatilovka via the south-south-east pass to Wenquan county.
7/ More roads are needed in the glacial valley system around Hemukanasixiang and Mashina Khabakh road, and G216/S230.

The Aral sea & Turan plane

Salinity in parts per thousand
Lake Balkhash = 3ppt
Aral Sea = 10ppt
Caspian Sea = 13ppt
Black Sea = 13-23ppt
Lake Van = 23ppt
Lake Urimia = ~10ppm
Lake Sarygamysh = 11ppt
Lake Sevan = 70ppt
Baltic Sea 10ppt
Ocean average salinity = 35ppt
Great Salt Lake = 50-270ppt
Lake Superior = 0.63ppt
Lake tahoe 0.5ppt

Caspian sea policy
The Caspian sea is about 35% as salty as sea water. So while it is not totally deadly to plants, the water is still worthless for agriculture. To my mind, we do the planet a service to the extent we clean up and consolidate salt contamination. So let's consider it a good thing when some human activity:
1/ Lowers the level of the Caspian sea without spreading salt around to other places.
2/ Washes salt out of the surrounding areas into the salty Caspian sea.

Caspian sea ground water flows
We can estimate evaporation by area and the area of wet soil nearby. How much less water is flowing in than is evaporating? That is the amount of ground water flowing it.

Ground penetrating radar
Let use this tech to map how far down bedrock is all around the world. Then we will have a better idea of which places:
1/ are good for farming
2/ When places are good for groundwater impounding.
3/ The water flows around central Asia and other places.

The Caspian Sea 91m below sea level
1/ If the Caspian leaked more than a little bit we would not have a low salinity **endorheic sea**, but due to evaporation the salinity would be build and build.
2/ We should drill the natural canal of the Peka Manych river, or Lik river near Rostov-on-Don and Salsk and Baza. We should date the salty layers to see when/if the Oceans flowed into the Caspian. If we can do this, it may give us valuable information about climate peaks and maximum sea levels on earth.
3/ There may be other locations that will do the same and tell us about maximum sea levels on earth.

The Aral sea is 70m higher than the Caspian sea
The Aral sea is at +42m
The Caspian sea is at -28m

Propaganda alert: see illustration below
The East Ustyurt Precipice is only ~60 meters tall.

Drain the Aral sea & Sarygamysh Lake
We shall dig canals and drain the salty Aral Sea and salty Sarygamysh lake into the salty Caspian Sea. Thus we will help decontaminate these areas of their naturally occurring poisonous salt.

Maybe we build the opposite of a hydro electric plant here. Due to the isolation, the proximity to coal and the need to operate year-round, maybe we use coal to power this pumping.

The salt line of the Aral sea
1/ Everything west of the Syr Darya drains into the Aral basin which (if full enough) drains to the North via the Ob river into the Kara Sea in the Arctic. What is the elevation of the pass to the Kara Sea? I wonder if it matches with the elevation of salty soil all around the basin.
2/ How high can the Aral sea get before it floods into the oceans? Maybe it is a good idea to focus our irrigation water on river beds above this point.
3/ How high is the salt line for every salty interior basin? Where is the salt line for sea level around the oceans? Where is the level where land first starts getting statistically, detectably higher due to the occasional presence of high sea level or tsunami. It would not be surprising if we are able to tell by the concentrations what the maximum sea level line is in recent warm ages, and also the maximum tsunami line.
4/ We really should figure out exactly how and under what circumstances the Aral, Caspian and Black seas flood into one another.

Salty Sarygamysh Lake
This might be drained into the Caspian as well.

Lowering the Caspian sea by 15m
If we lower the Caspian sea by 15m, we reduce its surface area by maybe 35%. We reduce evaporation, and gain lots of good farmland near two abundant rivers.

The sea of Azov as reservoir?
Perhaps we can use this basin for storing fresh water from the Dnieper and Don rivers. It already has salinity at ~17.5ppt, about half of the open ocean. And perhaps most of the salt is in the water. Also, the location of this water near the breadbasket of Ukraine should be noted.

Consolidating brackish water
This should be public policy.

Samara to Uralsk = 256km
Samara to Orenburg = 412km
Samara to Aktobe = 684km
Samara to Aralsk = 1,303km
Samara elevation = 90m
Uralsk elevation = 35m
Aralsk elevation = 14m

Agriculture based on delaying runoff
Given the optimal use of terraces, ground water impounding, and also the sheer distance: There might be great storms in the Himalaya and it might take months weeks before the end of peak runoff reaches the Aral sea. Meanwhile, we are pumping the salty end-of-the-dry-season water from the bottom of the Aral sea and helping to decontaminate the basin. And eventually we might wash all the salt out.

Why the Aral and Caspian are drying out
1/ The runoff from the Himalaya is declining, or perhaps more accurately going long tail against a fixed amount of evaporation on the way.
2/ Men spreading that water around on crops only increases evaporation and water loss.
Endorheic basins
This is a drainage basin that normally has no outflows. These just accumulate salt. The flip side of this is that these basins often don't have much underground salt. So they appear to be easy to drain and cleanse of contamination.

Possibly drainable salt lakes

Name	Volume	Elevation
Aral Sea	87-km3	42m
Lake van	607-km3	1640m
Lake Sevan	33-km3	1900m
Urmia	26-km3	1275m
Lake Turkana	204-km3	360m

Drain Sevan, Van, and Urmia>
1/ All three lakes have brackish water and are thus essentially useless.
2/ Even the partial draining of these worthless mountain salt lakes will will produce lots of energy.
3/ Maybe we terrace all the salty lands exposed by these retreating brackish lakes. so that we can better saturate the soil with winter water and then drain the salt leaching water from the surface. Maybe after a few years we will have perfectly fine surface farmland.
4/ Lake Urmia is close to the Terek/Volga aqueduct. Perhaps we will pump some water up with the energy produced by draining Lake Van or lake Sevan. Then we use this water to help wash the salt out.
5/ Let's reduce the levels of these three lakes so the large shallow parts can be used for faming pans. This will also significantly reduce water lost to evaporation relative to inflows.

32/second = 1-million/year
If Lake Urmia has 5-million meters of water, then it will take 5-years to drain if we have 32 square meters of aqueduct. That is three 4-meter pipes or eight 3-meter pipes. But here is also pipe hydro-electric energy for 5-

years. After this, the pipes become peak capacity for winter storms. In fact the system is designed to capture all the water from the biggest winter storms, and as a result, in the dry season (which is over 95% of the time), we have infrastructure to drain Lake Urmia and perhaps lake Van.

Draining Lake Van
1/ Lake Van contains 607 cubic km of brackish water. Let's say we take the elevation down by say 160m, or say a volume of ~300 cubic km of water. And this water is up at 1640m. While this is only about 3.3 Nile/years in water, it is up real high. So we can generate power, perhaps for decades, and at the same time, we can do the environment a favor with regard to surface salt decontamination.
2/ There is no reason why our approach here can't take 30 years. So that is 10 cubic km of water per year .027397 cubic kilometers (billion cubic meters) per day. This is the same as 27,397,000 cubic meters per day. 1,141,552/hour, 317meters per second. In other words we need 10X the size of the system to drain Lake Urmia. This is about thirty 4-meter pipes or eighty 3-meter pipes.
3/ Maybe we take 90 years to partially drain lake Van and only need ten 4-meter pipes or twenty-seven 3-meter pipes.
4/ Taking the level of Lake Van down by ~100m cuts the lake's surface area in half and gives us much more farmland after we have washed the salt out.

Draining Lake Sevan into the Caspian
1/ Most of this lake is shallow.
2/ An 11km tunnel to near the village of Kelbecer would permit us to drain the lake without any lifting over the lakes current level. 3/ If we lower the level of the lake by 40m we, will cut evaporation area by around 75%. We will also gain 75% of the lake bed as farmland after we wash the sale out.

Let's make sure that none of these lakes are from a volcano

Lake Urmia renamed
Let's call it Lake Tabriz. And let's call the watershed as the Tabriz basin.

The Terek & Reka Samur rivers
1/ Let's try to store and divert the storm runoff water from these two rivers.
2/ Let's stop all the water flowing into the Caspian sea which we want to dry out.
3/ This is most of the way to Iran from the Volga.
4/ The Reka Sulak is easy to dam up.

Caucasus pipe hydro electricity
This is another regional electricity source for use by the nations in the region. However, it may also be used to send water to where it is needed

Africa

North Africa relocated
We shall take all the people of the Sahara and Nile area, (Libya 7, Egypt 102, = 109 million people) and move most of them to the wetter southern edge of the Sahel (and other locations) where at least some rain falls, and where we can use global water projects for irrigation water. Thus more of equatorial Africa will come into agricultural production where the sun will be strong during ice ages.

Also, here at this big planting band at only around 10° to 15° north, we find one of the most important places that mankind should be building water catchment and soil nutrition. We want to take the consistent tropical runoff of the Congo and African rift valley and build means of capturing and transporting it as much of it as is practical to the dryer areas of Africa

African rail system
The main Africa exchange shall be located near Khartoum Somalia and the new city of Adana. Here is where Africa's exchange will go. This will be the most important commercial city in Africa. It will be where the lines mostly converge on their way out of Africa.
1/ The **Adana line** connecting Africa with the outside world with stops at Atbara/Kassala, Aswan Cairo and New Issa in Turkey.
2/ The **Senegal line** running from Adana to Chad, Nigeria, Mali to Senegal.
3/ The **Cape line** running from Adana through Kenya and Mozambique to near the cape of South Africa.
4/ The **Congo line** running from Adana to near the outfall of the Congo river and the northwest corner of Angola.
5/ The **Botswana line** starts on the Senegal line near Guera Massif in Chad. Then it runs through CAR, Congo, Botswana and Mozanbique where it joins with the Cape line.
6/The **East loop** runs from the Cape line in Kenya to through Somalia, Somaliland, Djibouti, Eritrea and to reconnect with the Adana line at Atbara/Kassala.
7/ The **North line** runs from the west end of the Senegal line north to the Ceuta ferry terminal. Then the line runs across the north of Africa and connects at Cairo.
X/ The stops will be spaced about 200 km apart.

Adana
This is the natural main interchange for the trains of Africa. This place will have the most rail and air connections in Africa, with direct flights to all the other main transport hubs in the world and other locations.

Most people entering and leaving Africa will go through here.The area includes all parts of Sudan east of the White Nile that are south of the Southern outskirts of Rabak and north of the northern outskirts of Melut. The area also includes the Ethiopian provinces of W. Tigray, N. Gonder, Metekel, Asosa, Kamashi, Tongo, W. Wellega E. Wellega, Illubabor, and the Gambellas.

The parts of Ethiopia above are cooler highlands with a nice climate. This is where the townships will mostly go. The train interchange, the warehouses and the airport will all go down between the two Niles. As with all nations, Sudan and the UM territory will allow its neighbors to build all the viaducts they need to access the UM main line.

This is a much better location than Cairo. The highlands of Ethiopia have a nice temperature and there is much more rain. Egypt is far too hot and dusty and vulnerable to tsunami and Nile flooding.

Adana as Africa's main transport center

Ancient Egypt will always have tourists and archeologists. However its location is wrong as an inter-African interchange. Sudan makes a much better interchange because it puts the people of Africa closer to one-another. Thus the interchange will better serve the needs of the people moving about in Africa. There will be other interchanges, but this is naturally the main interchange that also connects to the outside world by rail and air.

The reliable Nile flow

3/ Approximately 37% of the Nile's flow is the rift valley spring water from Lake Albert, remarkably consistent water output. This consistent flow at least should be put in pipes.
2/ The Nile's watershed is tropical and more consistent than areas further from the equator.
3/ The Nile comes from two locations, the White Nile is from the Lake Victoria highlands and the Blue Nile is from the Ethiopian highlands.
X/ All of these things have made the Nile a famously reliable source of irrigation water for thousands of years.

The Egypts and Sudans

Egypt and Sudan will be combined and re-divided into 6 UM settlement nations:
1/ New Egypt: This is firstly made up of the river valleys in the dryer more northerly parts of Sudan that don't get enough rain for agriculture. The water that makes it to Egypt (with no rainfall) bloom will now make twice as much half-rain land bloom in Sudan. And because there is much less evaporation and seepage of the Nile waters in Sudan, the water will go even further.
2/ Old Egypt: If the annual flood is high, the Nile will be farmed further and further down into the riverbed of Old Egypt so that no water is wasted even in the wettest years.
3/ Adana: This mostly non-agricultural UM exchange city is explained elsewhere. Adana will be a new capital of Africa.
4/ South Sudan: This is the central 5 provinces of today's South Sudan (Northern Bahr el Ghazal, Warrap, Unity, Lakes, and Central Equator)
5/ East Sudan: This is the Upper Nile, Jonglei, and Eastern Equatoria provinces of South Sudan. This area has a population of only 16 people per square kilometer.
6/ West Sudan: This is the sparsely populated provinces Western Bahr El Ghazal, and Western Equatoria provinces of South Sudan. This area has a population of only has 8 people per square kilometer.
X/ South Sudan population density: This is a rich equatorial nation with enough rain. It can easily sustain a population density that is many times the 18 people per kilometer it sustains today. The settlers will be armed and given defense training. There will also be spies able to call in airstrikes. These settlers will be an ethnic mix of many nations including Exhods settled in large mixed community groups among the Sudanese to stabilize the nation. As they will outnumber the South Sudanese by a few fold, they will be able to impose peace upon the nation. This sort of resettlement should be the standard way the UM deals with lands that are both war torn and underpopulated.

UM no-grazing zones

1/ Where the desert will not sustain grazing over the long term, and where topsoil is being destroyed by over-grazing, and where low-yield semi-nomadic herders are driving higher-yield sedentary farmers off the land through violence, the UM shall establish no-grazing zones.
2/ The UM shall post signs and patrol its no grazing zones. The UM shall destroy or confiscate unauthorized livestock found grazing in these areas.
3/ The herders that lack means of living without herding in the desert shall be relocated to farmland where they must farm or get other work.

Egypt moves upstream So there is more water and land

1/ As with all rivers flowing from a marginal area with some rain into a total desert, the Nile's water should be used upstream as much as possible. This is because there is more rain in these areas and the irrigation water can thus often go 2X or 3X as far. There is also less less evaporation and less ground seepage loss. So shifting upstream not only gives us more water, but it also goes further. Also, in Sudan, the ice age sun will be stronger.
2/ The north end of the Nile in Egypt should probably eventually only be farmed with groundwater and water piped down the dry Nile channel.

3/ Moving most of Egypt upstream lets us use Aswan for seasonal impounding. Thus we can use the entire contents of the dam each year.
4/ We look at where the water grows the most per unit and we use the water there. The most productive land gets the water.

More water for the Nile
If practical, we shall divert some runoff from Lake Victoria, Lake Albert, or Lake Edward into the Nile. If practical, we shall some divert runoff from the rivers of the upper Congo basin (Uele, Chinko, Kotto and Mbomou, Aruwimi, and Lindi) into the Nile.

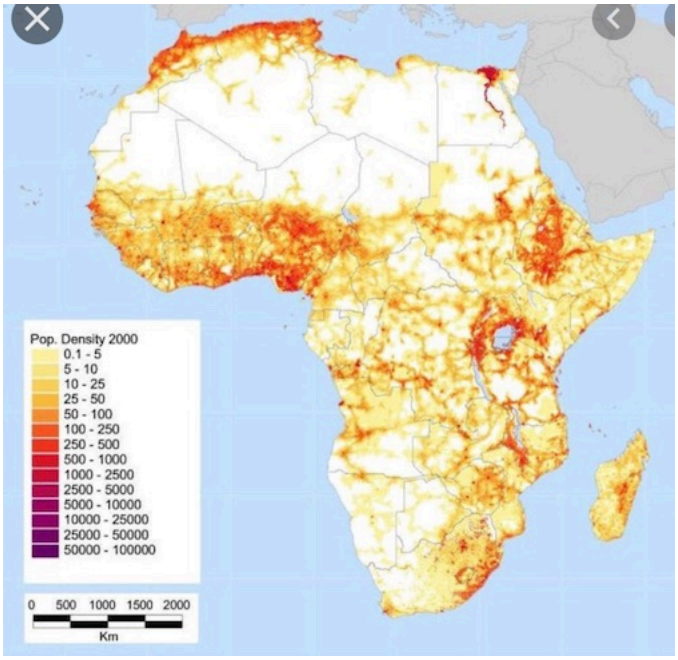
East Chad
1/ At Bangui the Ubangi's discharge is equal to about 1.41 Niles of water. As the Nile supports 250-million, the diverted Ubangi can theoretically support 350-million new settlers.
2/ Hydroelectric power generated elsewhere in Africa shall be used to power the small amount of pumping needed to move the water.
3/ The Ubangi shall be diverted into the Chad basin where it will provide the people of Chad, Niger, Nigeria and northern Cameroon with irrigation water.
4/ We shall make the underpopulated eastern part of Chad into a new settlement nation irrigated with UM water projects from the Congo basin.

Central African Republic
Let's split the CAR. The eastern 60% shall be the nation of Bangara and the western part the nation of Bocaranga.

The western part of South Sudan
There are 15 under populated counties. If the UM is going to substantially increase the irrigation water available, then it should get some resettlement territory here.

The poison pill
No matter how much food we can grow, it will never be enough unless we end the population explosion. So we say emphatically that unless nations gladly and eagerly accept and enforce and cooperate with our UM population controls that get no UM water, and no foreign aid money. None of it at all. They get completely cut off like North Korea until they agree to comply with global population rules. Also, no nation shall go around the UM and build any of the facilities. explained herein.

African Rivers
Cubic meters per second
Nile = 2,830 (1.0 Niles)
Aruwimi = 2,000 (0.7 Niles)
Benue = 2,400 (0.8 Niles)
Kunene = 174 (0.1 Niles)
Kwango = 2,700 (0.9 Niles)
Limpopo = 170 (0.1 Niles)



Niger = 5,589 (2.0 Niles)
Ruki = 2,800 (1.0 Niles)
Sangha = 2,471 (0.9 Niles)
Sankuru = 2,500 (0.9 Niles)
Zambezi = 3,400 (1.2 Niles)
Congo = 41,200 (14.6 Niles)
Kasai = 9,873 (3.5 Niles)
Ubangi = 4,000 (1.4 Niles)

The Mighty Congo river
The Congo river flows is about 50% more water than all of Africa's other rivers combined. The Congo flows about 14.6 Niles. And much of this seems to be climate-independent rift valley runoff. We should know how much rift water is included in the Congo's flows, for we can divert this at high elevation.

The Upper Niger river
The Benue river
The Ubangi river
The flow of these rivers should be diverted to dryer areas if we can.

The Senegal river
Like so many other rivers, none of this river should be wasted on the ocean. Nothing. Also, as much as possible this river should be used to supplement the marginal lands at the center of the nation, near say Vendou, lands which have soil.

The Limpopo river
1/ In dry South Africa, why is any of this river's precious water spilled into the ocean?
2/ The Limpopo is about the size of the water supply for Southern California.

The Tana river
1/ Why is any of this river's valuable desert water spilling into the ocean?
2/ Let's use the water further from the coast in a supplemental role where it will make a difference in agricultural output.

Niger river
This river has twice the flow of the Nile and due to the flat terrain, it can easily be redirected.

The Congo River = 14 Niles
The Congo is the world's 2nd largest river in terms of water flow. Also, its equatorial watershed is even more reliable than the Nile's. So let's take some of those 14 Niles and divert the water to irrigate the marginal parts of Africa. If the Nile can support 140 million in a total desert, then how much can 4 Niles of water support in semi deserts?

Population density people/sq-km

Singapore	7,810
Rwanda	525
Burundi	492
India	456
Japan	347
UK	275
Germany	240
Nigeria	197
Uganda	165
China	148
Sierra Leone	90
South Africa	45
Niger	41
USA	36
Mozambique	35
Chad	28
Brazil	25
Congo	15
Canada	4
Russia	9

The Congo is underpopulated
The Congo is a very rich land with 15 people per square kilometer. Surely it could sustain a population density like Italy (205) or Germany (232). If we use 225 people per square KM, that is 15 times the current density of 15 (And current population of 90 million). 15 X 90-million = 1,350-million as a sort of upper limit.

More people in the Congo
The Congo shall become 10 nations based on the nation's old pre-2015 provinces map. The first 3 provinces are not under-populated, but need non-Congolese immigration to buffer existing populations and make democracy work. The Last 7 are under populated and the population shall be increased many fold in these areas:
1/ Bas-Congo plus Kinshasa
2/ Nord-Kivu.
3/ Sud-Kivu.
4/ Kasai-Oriental.
5/ Orientale.
6/ Maniema.
7/ Equateur.
8/ Bandundu.
9/ Kasai Occendtal.
10 Katanga.

The Congo river water is all surplus
The entire Congo basin is one of the wettest places on earth. All 14 Niles of water can be used elsewhere if we can move the water there.

How much of the Congo water is from rain?
How much of the Congo basin's water is from rain and how much is from volcanic spring runoff? We should know this. Maybe we can patch the volcanic leak and divert the water into the White Nile basin.

Monitor the rift water
We should probably have numerous thermometers and gas detectors around the African rift lakes.

Upper Ubangi tributaries into the Nile
Perhaps we will send some of the upper Uele, Mbomou, or Kotto rivers into the Nile basin. Although it is probably better to use all this water for the Chad area, which might now support a great number of people thanks to the irrigation water. And for energy, maybe we use the pipe hydro electricity from lake Rwanda at 1460m

a Bangassou-Bria aqueduct
We want to intercept as much water as possible near:
Bria (elev. 553m) and
Bambari (elev 465) and
Bangassou (elev. 457m).

Bria Congo to Sarh Chad is ~530-km of distance and the fall is from ~553m to ~347, so it is 206 meters avg. fall in 530-km of distance. These are higher here than Bangui is 369m. There is less uphill water pumping to get to Sarh Chad (elev. 347).

Rift valley water as volcano coolant
1/ The White Nile sure looks like volcanic rift runoff. And so does Lake Tanganyika. Maybe the simple rule is that we take as much water as we want provided the lake levels do not decline by more than say 1 meter. We don't want to be causing a volcanic eruption.
2/ We should figure out the hydrology of these lakes. Which one's have their own water and which exist through runoff?

Patching leaking rift lakes to increase the Nile's volume
In general, the lake is still there, so the leakage is probably not very deep. So Maybe it will be easy to close off much of the Congo side of the rift valley lakes (where there is plenty of water) and instead drive the water towards the Nile side (Where there is a huge shortage of water).

Volcanic runoff water is special
1/ Volcanic runoff is essentially distilled and contains almost no salt. So it is better for irrigation
2/ Volcanic runoff is also relatively constant and not related so much to climate.

Lake Victoria elevation 1135m
We should be able to divert some water from Lake Victoria (or one of the other nearby lakes) The easy way is perhaps to divert water down to Lake Albert 170km away and 520m down. Then from here the runoff is the White Nile.

The other way is to put the water in pipes and send it via pipe hydro. Some pipes may go to Kenya, others to Somalia and Ethiopia. The town of Juba Sudan is about 500km away and 585m lower at 550m elevation. So we have a 0.1% slope and perhaps a couple Niles of runoff is diverted from the over-wet Congo side to the over-dry other parts of Africa. (Hopefully the water is run-off, and hopefully we are able to do this safely. As long as we are not lowering the lakes this should be harmless.

Lake Rwanda elevation 1440m
1/ Lake Rwanda is the highest of the major lakes in the rift valley lake system.
2/ On the East the contours seem concentric. On the west, the contours seem to emanate from Lake Rwanda.
3/ What percent of the rift valley's fresh water comes from each lake?
4/ Perhaps the best use of the high elevation Lake Rwanda water is to make energy in a pipe hydroelectric system so we have electricity to use pumping water around in Africa.

What Rwanda, Burundi & Malawi look like
They look like the volcanic gas version of Djoubuti, Bangladesh and Beijing/Tanjin. They look like they might be places where everyone died before.

The early habitat of man
It sort of looks like we might have gone between Congo, Tanzania and Ethiopia.

African circular nations
1/ Ethiopia
2/ Congo,
3/ Zimbabwe
4/ Greater Tanzania including Burundi, Rwanda, Uganda, Kenya and the tsunami zone area of Somalia. 5/ The south side of Sudan is round,
6/ The north border of South Africa is round.

Lake	Elevation
Lake Albert	615m
Lake Edward	912m
Lake Kivu	1460m
Lake Victoria	1135m
Lake Eyasi	1030m
Lake Kyoga	1033m
Lake Tanganyka	773m
Lake Rukwa	800m
Lake Wantipa	921m
Lake Mweru	917m
Lake Malawi	500m
Lake Kariba	476m

Lake Malawi dam
If we bore a ~110km tunnel to Ifinga, we can drain Lake Malawi towards Morogoro and Dar es Salaam.

Lake Albert
The remarkably consistent run-off from this lake currently accounts for 37% of the Nile's flow. This is very valuable water that can be counted on in a climate crisis.

Use the Zambezi in the dry areas
Considering how the Zambezi is carrying water from dry areas into wet areas, and how plentiful water is in Mozambique, we should probably try to use most of the Zambezi before it reaches Lake Kariba. And this would seem to only result in less runoff on the other side of the lake, which has other rivers flowing into it. This will give us a great deal of fresh water to use in the drier areas of Zambia, Botswana, and Zimbabwe, Angola, and perhaps in Namibia. So maybe we take the Okavango area... which is all today sacred wild animal parkland forever off limits to use: (You can google the game parks: Moremi, Chobe, Sioma, Caprivi, Hwange, Makgadikgadi). But here we have an area at ~18° latitude with powerful sunlight. And it is a safe and high place. And it is next to a river that looks like it comes from a source that is not closely related to how much ice-age sunlight is reaching our planet's surface. So let's go some distance in this direction with the lands that are right next to the Zambezi — lands that are ideal for irrigated industrial farming and let's leave the rest in fenced isolation until we need them.

Is it worth having a higher dam for Lake Kariba?

What is the ideal zebra population?
What about elephants? Are we supposed to have as many animals as existed in 1850 when there were only around 80-million African people living in Africa? Maybe

the pendulum has swung as far as it is going to go in the direction of animal conservation. Now maybe we can carefully consider what has been taken off the table for us. Let the animals live where the ground slopes a bit, but leave the flat parts suitable for industrial farming the people.

Water sources that will not stop in an ice age
Lake Victoria, Lake Malawi, Lake Tanganyika, and Lake Albert seem to be all from an underground rift aquifer connected to the ocean. So they would appear to be an eternal source of fresh water. Indeed, Lake Albert produces a very constant 1,048 avg. cubic meters of water per second of water. This is 37% of the Nile's annual volume. This water seems to be completely independent of surface rainfall. Where are the other similar sources of volcanic water around the world? We should know all about them before the climate crisis.

The Congo and the rift
Africa not only straddles the equator and has substantial rains, but it also has this eternal fountain of fresh water that seems to stretch from Zimbabwe to the border of Ethiopia.

A dry Amazon basin?
We should figure out exactly what happens to Amazon basin rainfalls during ice ages. And how long do the changes take?

The Lukuga river
This seems like rift valley water leaking over the surface into the Congo watershed. How much water is doing this underground? Maybe we should carefully monitor rains in the Congo watershed in thousands of locations and figure how much the inputs are. This especially between the upper Congo river and the rift valley lakes. Then we subtract for evaporation and the remainder is rift water. What percent of the Congo's water is from the rift?

Is rift debris characteristic?
If we core drill the rift in **Lake Tanganyka, or the Red Sea**, can we tell from the cores that we are looking at a rift valley?

Can we pump out rift lake water?
What happens when we pump water from these lakes? Do they replenish? Do they get hotter? Do they get colder? How much water can we take without causing heat to build up? What happens if we raise the water level? How do we stimulate water production? Is it by higher or lower levels?, Or maybe the amount of water being produced is not a function of how much water is on top. Or maybe it doesn't matter at all as long as the lake's floor is wet to capture steam.

Are the rift lakes limitless?
We should test these lakes and see how much water we can pump water out without reducing the level.

Ready for the ice age crisis
These African water movement systems are perhaps critically important for ice age preparation, so the world can be ready.

New Botswanas
We will run aqueducts from the Congo watershed in to the neighboring Zambezi watershed and make a number of UM settlement nations, irrigated nations of the following areas re-configured.
1/ Namibia — pop 2.5 million
2/ Botswana — pop 2.5 million
3/ Zimbabwe —pop 14 million
4/ The underpopulated dry areas of south Angola
5/ The underpopulated dry areas of south Zambia
6/ The underpopulated parts of southern Mozambique
(Gaza/ Inhambane, Maputo provinces)

Careful taking water from volcanic lakes
If the water is already running off Lake Victoria or the other rift valley lakes like Lake Malawi, then we can use it. But let's not deplete any of the water that is keeping any volcanic area from erupting. If anything, we want to be adding water where possible to volcano irrigation systems. Also, if another nation is doing this, without UM approval, then other nations shall have the right to intervene to destroy the facilities helping to provoke a volcanic eruption.

The Aswan dam area
It reminds me of what Mussolini did clearing the Roman Forum two decades earlier. It also reminds me of China destroying those ancient Uighur graveyards. Also curious is the way they put the moving of the mega-tombs in propaganda trailers for movie theaters.
It wouldn't be surprising if there are/were some major archeological sites here covered/ destroyed by the the lake water.

The upper Niger river water to the Atlas mountains
I had tried to get water from the bend in the Niger river at Timbuktu to Morocco. And it is all flat, but the distance is simply too great. And besides, Niger river water is scarce as is water in Spain. So it will probably be less energy intensive to use some sort of hydrophilic wheel tech, or fuel-aided solar distillation process. This in addition to better management of native runoff.

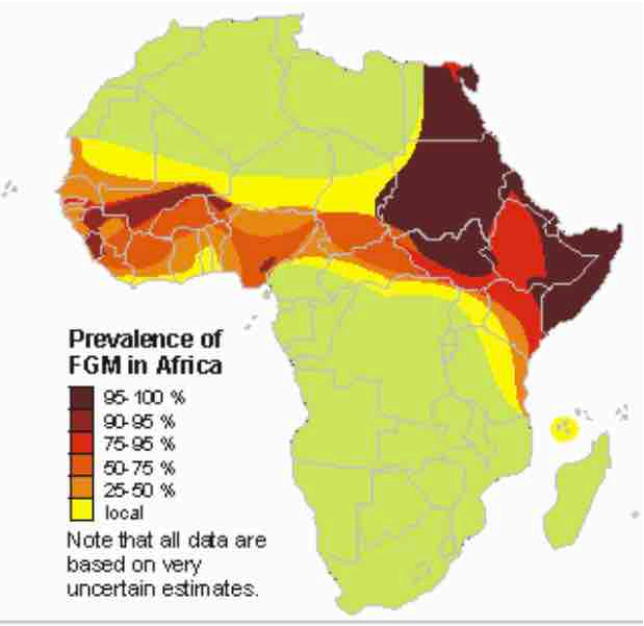
Morocco water projects
1/ In Morocco, we should be capturing and impounding all the seasonal rain — all of it, from all parts of the nation.

None of this water (even the ground water) should be flowing into the ocean.
2/ The Asif Tifnout should probably be dammed in a number of places. The groundwater might also be dammed behind Taroudant and perhaps other locations up river.
3/ All of the high-altitude seasonal water flows should be put in pipes at high altitude. Like everywhere else, this is the most useful water because it can be sent the furthest.
4/ The Oued Moulouya basin looks like it can be made to work like Samarkand if the river is dammed up. This looks like an area that is about 14X22km. It might also be used for seasonal water impounding if that is needed. The water going past the Oued Moulouya looks like it is mostly being wasted on the desert, where there is a big permeable fringe. Clearly with the water coursing though the desert like this, the greater part is waste. So once we have our water in pipes, we can take it anywhere. So let's pipe our water to places where there is less seepage and all the runoff can be reclaimed and re-used. And also places with ground water systems that allow for rainy-season washing of accumulated salt.
5/ The Ziz river should be impounded above Hammat Moulay, Ali Cherif and maybe at 5 points above.
6/ We want to use ground penetrating radar to find and dig reclamation wells in all our desert underground streams. We want reclaim all the underground water before it dwindles into the desert or spills into the ocean. So all the hidden seasonal underground streams on the Atlas need to have wells to intercept the groundwater.

Gibraltar straits tsunamis
There are tsunami clamshells up maybe 30 or meters on the cliffs of the Algarve. So all the low-lying areas of Huelva Cadiz, Algeciras, Tangier, Rabat, Casablanca area look like they should not be occupied.

The flat route between India and Africa
The flattest route between India and Africa is via the coast of Pakistan and Iran. This is the route that this trade should take and neither Pakistan, nor Iran, nor any other nation may interfere with the trade passing through their nation on a UM train route.

A flat route between West Africa & Europe
This is simply along the Atlantic coast of Morocco with a short tunnel north of Agadir. Then in Spain, it is mostly along the Mediterranean coast with a tunnel south of Perpignan. The route through Turkey to either Europe or to Centrograd involves
climbing up to either the Turkish plateau at 1400m. or in Iran, the pass is at about 1800m.



Somalia
1/ The areas where the Islamists and Al Qaeda are strongest are all near the coast in what looks a bit like a tsunami wash area. So it appears that fundamentally, these people moved to a place where people should not be living. Then they are trying (as is typical) to use this waste-land as a toehold and springboard for spreading out into other people's good and safe lands.
2/ Somalia shall become 3 nations: Somaliland, Somalia, and Puntland. The Somaliland/Puntland border of be as declared by Somaliland in 1991. The Puntland/Somalia border shall run roughly down the Shabelle river from the Ethiopian border to 20 km downstream past Buulobarde. Then it shall run to halfway between Ceeldheere and Cadale.
3/ Somalia's right to the Ethiopian runoff waters from of the Shabelle and Jubba rivers shall be contingent on the nation remaining at peace with its neighbors and with its maintaining freedom of religion. If Somalia cannot remain at peace, it will see its water dialed down until it is forced to remain at peace. This peace includes all of Somalia's neighbors including Kenya, Ethiopia, Somaliland, Puntland, as well as all the other nations in other parts of the world. And Muslims living in these other nations.
4/ Because the land is so dry and poor, much or perhaps most of Somalia will have to be relocated across the various relocation nations in Africa and mixed in with other relocated people so they do not predominate and cannot easily serve as a fighting or menacing force.
5/ The cities Mogadishu, Makra, and Kismaaya shall be raised to the ground once they have been evacuated.

South Africa break-up plan
South Africa shall be broken up into 6-nations following language majority. The final division of land shall be by UM Over-Senate election.
Tswana: Including parts of Northern Cape & Sesotho and N. Sotho.
Sesotho: Not including a small area that becomes part of Northern Cape.
Xhosa: Not including the western third of eastern cape.
Zulu: Including parts of N. Sotho.
Sotho: This includes all of Guateng, and Mpumalanga that are not majority Zulu and next to other Zulu lands, or majority Tswana and next to Tswana lands. This nation shall be made up of a mixture of peoples and will include Pretoria.
Capeland: The parts of Northern Cape, Western Cape, Eastern Cape, and Free State that are not majority black and are contiguous with Capeland. Capeland must accept a number of mixed immigrants from many parts of the world.

Lost in darkest Africa
Europeans disappeared going overland in Africa.

Water volumes
The Amazon river = 74 Niles
The Oronoco river = 13 Niles
All Himalayan rivers = 50 Niles
Certainly most of the water is not falling up high, and the mountains are not as high as the Himalaya. But Asia has 11-times as many people as South America (Asia pop. is 4,666-million — South America pop. is 430-million).

Free electricity in South America
There may be totally free electricity in South America and probably most of the metals in the Americas will be smelted with Andean pipe-hydro electricity. The electricity alone will pay for the pipe-hydro systems. Later, if climate dictates, we use the system for the electro-siphoning water to supplement the rains of the Amazon basin

Matto Grosso
This is a Brazilian state. The name sure looks like it comes from "death big", or "big death" in the low-lying Amazon/Orinoco basins, which are conspicuously underpopulated having only 24 million people living there.

Buenos Aires = good air
This is because the shape of the coastline funnels the breeze and the tsunamis.

Monte•video
Imagine that you are in Montevideo when the next Atlantic epochal•lyse strikes. That 400m hill to the east, on the other side of Atlantida district. That is all anyone there can think of or see. It reminds me of Mt. Sole•idea, in Los Hoyos California. (Mt. Solidad in La Jolla, California)

Para•aguay
Qestion: Why are your people living so far inland?
Answer: Para•agua, eh?

Bahia Balanca
This name means oil field to me.

Amazon high-grounds
There are many higher places for communities.

The Darien Gap
No road connects North America to South America. No kidding. Go look at a map. There is a gap in south Panama, the "Darien Gap". Google it and look at the explanations. Note the lame explanations and mystery. If you look up the Trans-Siberian railway, you will see how easy routes connecting continents overland tend to suffer from the same mysterious problems that can't be explained. It reminds me of how impassible seas were a deadly problem outside of Gibraltar for people seeking to go around the Mideast.

South America is close to North America
The distance from San Antonio to the Medellin Colombia is about the same distance as San Diego to Boston. I can't find out the exact distances because the Darien Gap prevents Google Maps from giving a distance. Also, traveling along the cost is possible, so there are no mountain ranges that must be crossed between North America and South America. We can zig-zag between the panama canal and the Amazon basin in such a way that no mountain ranges need to be crossed.

The best aid for South America

It would be to connect South America's industry to North America via an inexpensive rail freight service.

Amazon Environment
1/ The Amazon highlands are only for walled communities and nature reserves. So most of the wilderness area will remain empty.
2/ The Amazon lowlands are only for farming and nature reserve. Also, if it rains too much, or if the soil is bad, or salty, or if the location is too far away from safe high ground, then we leave this area for habitat.
3/ The wild creatures get free range around our fenced farming areas.

The Amazon is curiously under-populated
Maybe it suffers from epochal lyses. It is a good thing we have high ground areas.

Andeo
1/ The Amazon and Orinoco basins are the world's largest area with both tropical sun and abundant water. Yet this is also a sparsely populated. Given the size, rain and sunshine of the area, it could become the world's most agriculturally fertile region. Here are the nations and provinces that we will use to create the new UM settlement nation of Andeo: Venezuela (pop 30.6-million), Guyana (pop 788,000), Suriname(pop 587,000), French Guiana(pop 294,000), Panama (pop 4.3-million), Southeast Columbia below 1900m, the Brazilian provinces of Roraima (pop 631,000), Amazonas (pop 4.2-million), Acre (pop 895,000), Amapa (pop 862,000), Para (pop 8.7-million), Mato Grosso (pop 3.5-million), Eastern Peru and Ecuador below 1900m, Bolivia north of Cochabama and below 1900m.
2/ Andeo shall be redivided into 12 to 16 nation states, each with some high grounds. These will cooperate with each other in the way of the Euro-zone with internal free trade, a common currency, a free employment zone, standardized laws and procedures, a mutual defense treaty, and other mutual projects. This will be typical of UM resettlement nations.
3/ In Andeo, the UM shall determine which areas are for farming and townships and which are to be left as habitat. However, given that the Amazon basin seems to be regularly washed away by tsunami flood, the preservation of the low lying rainforest areas shall be considered chimerical.
4/ Panama shall become part of Andeo, but the canal shall be USA territory, and run for no profit by the USA. This is because only the largest nations can assure the proper more-and-better use of the 2-way sphinx that is Panama.
5/ All island nations in the Caribbean that are without tsunami safe high ground, together with all portions of Central America and the Caribbean that are on the Caribbean plate shall also be evacuated to Andeo unless the people wish to stay.

Amazon water network
There is no need to take any action now. But eventually during an ice age, we may need to dam the tributaries and take water from the central Amazon river and distribute it around to parts of the Amazon basin.

Venezuela's oil fields
These shall belong to all of South America.

Parana river irrigation
The Parana river has 6.5 Niles in water flow and outfalls near Buenos Aires. If cost-effective, or needed for ice age preparations, the UM shall build aqueducts to better use this water.

Jamaica, Haiti, south Cuba and Brazil
These are the three high land areas of the Caribbean. Each must take its share of people from Caribbean islands that are uninhabitable due to tsunami risk. If the other island is Spanish speaking, its people go to the mountains of Cuba, If the other island is English speaking, its people go to Jamaica. If the other island is Portuguese speaking they go to Brazil. If the other island is French speaking, they go to Haiti.

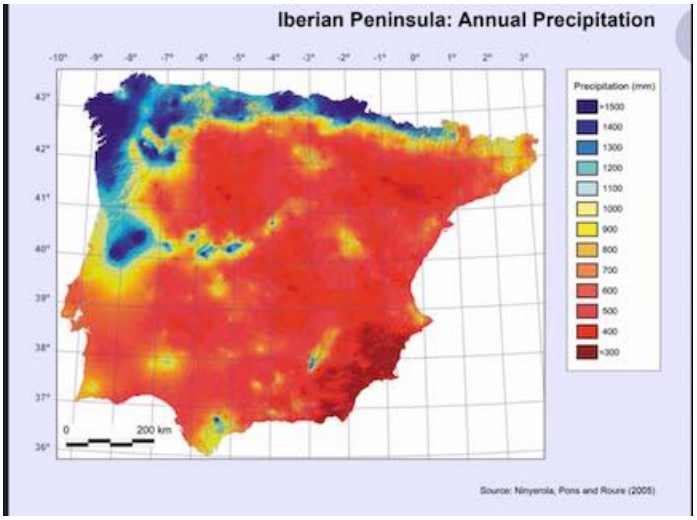
The Bearing straight by boat
Right at the tip of Alaska we have Lopp lagoon, which is narrow and about 35km long. And on the Russian side we have a similar situation with Uelen and Inchoun. Maybe we can simply put in docks and gantry cranes and run an endless stream of ships back and forth for the ~100km trip between North America and Asia. Let's do this at first and maybe later we can build the bearing straight bridge if it seems like a good idea.

Some rivers
Cubic meters per second
Amazon 209,000 (74 Niles)
Arkansas = 1,260 (0.4 Niles)
Colorado = 623 (0.2 Niles)
Columbia = 7,734 (2.7 Niles)
Danube = 7,130 (2.5 Niles)
Indus = 6,600 (2.3 Niles)
Mekong = 16,000 (5.6 Niles)
Mississippi = 16,800 (5.9 Niles)
Missouri = 2,445 (0.9 Niles)
Parana = 18,500 (6.5 Niles)
Platte = 7,037 (2.5 Niles)
Red river = 1,643 (0.6 Niles)
Rio grande = 2,400 (0.8 Niles)
Snake = 1,558 (0.5 Niles)
Willamette = 935 (0.3 Niles)
Volga = 8,060 (2.8 Niles)

Idaho Valley

1/ What a gorgeous place. We should build townships for millions of people here.
2/ The Yellowstone risk is real. However, to my reckoning it is probably a thing that only happens well into ice ages. So this seems like a place that is much safer than our coastal tsunami funnels.
3/ The Senate should say which areas are tsunami areas, which are river flood areas, which are catastrophic fire risk areas, and which are volcano areas. Then these places all get slow condemned so their equity is all gone after 30 years, or whenever. Then we no longer have nearly as many natural disasters.
4/ Yellowstone can provide lots of free geothermal heat and the hydroelectric energy.
5/ The Idaho valley will connect the valleys of western Montana and Canada above.
6/ The Idaho valley also connects northwest Wyoming, eastern Washington / Oregon and norther Nevada, and Utah. This is a very large area that can house great numbers of people.

Canada
1/ Township living makes the far north much more habitable.
2/ If we apply my linguistic/ethnic groups living on the US/ Canada border, then Vancouver, Winnipeg, Toronto, Montreal, and even Quebec city are part of the US. Indeed, the furthest cities Canada has to the the US border are: Calgary, a 2:40 drive (259km); and Edmonton, is a 5:30 drive (526km). So Canada is geographically, economically, and commercially a place that is quite tied to the US.
3/ Canada has a population of 38-million and 3.9 million square miles. The US has a population of 330-million and 3.8 million square miles.
4/ The separate identity thing with Canada doesn't make much sense to me. It seems less significant than the regional differences among Americans. Also, Canada's territory will be able to accept many times more immigrants if these people are settling in new jurisdictions away from the original Canadians.



5/ Therefore, I say that Canada shall be joined with the United States for all purposes. However, the new United States will be far less federalized, and as much autonomy as practical will be pushed down to the counties, many of which will be Canadian in nature.
6/ Under this scheme, there will now be two frontiers:
A/ **The great plains:** This is between the longitude of say Wichita to the Rocky Mountains. This area made much more habitable because of irrigation projects, and because of well-insulated, high-altitude townships with extensive hallway systems. and
B/ **The northern frontier**: The under populated parts of Canada, East Washington/Oregon, Idaho, Montana, Wyoming, and the Dakotas. Here the cold will be made much more habitable by means of a weather-proof rail transport system, and super-insulated "R-100" townships and extensive hallway systems.

California collected water use is ~800 cubic meters per second
I can't seem to find numbers that match precisely, But the total conveyed water use for the state seems to be around 25 cubic kilometers per year, or about 31% of the state's use. This the same as 25-billion cubic meters. If we divide by 31,536 (60-seconds, 60-minutes, 24-hours, and 365-days) we get 792 cubic meters per second. This is about 28% of the Nile's flow.

Another way to see it is that California with ~40-million people (24m in South / 16m in North or a 60/40 split) is "water-augmented" by a water flow of ~800 cubic meters per second. And let's just assume that the port of norther California using imported water is equal-to or less-than to the part of Southern California not using imported water. So We have 24million people living on ~800 cubic meters per second.

So 33.3 cubic meters per second will augment a million people with water at California levels including the rather wasteful agricultural uses (like alfalfa and rice growing) that arise out of the states high wages, distant alternative food sources, and ample deserts. • • • So in Southern California one Nile seems to have enough water for ~85-million people. And again, in Egypt this it is enough for ~140-million people. And these are "shoot from the hip" estimates.

The Upper Columbia river basin
This is an area ripe for water development given that the Columbia river has 2.7 times the flow of the Nile and the eastern 2/3 of both states is essentially a cold semi desert.

Europe
Arid Spain?

Would you look at all that red. Someone sure wants the world to think that Spain is so arid that it can't really be farmed. "The rain in Spain" was drilled into the brain with that moronic song in a high-budget film (Mary Poppins, Best picture 1964) ...What a blid. Now it is hard to talk about how the rain in Spain isn't all that bad, and Spain mostly only needs better water facilities to grow much greener.

Iberia
1/ Your river deltas are not sacred and the shore birds will just go somewhere else. You should feel free to use 100% of your river water. Despite what the OPEC sponsored eco-fanatics say, none of this water needs to coastal areas (also your nation's oil-fields). The winter waters if the Duero, Tajo, Guadiana, Guadalquivir, and Ebro (Hebrew) rivers should be totally impounded and none of this water should be reaching the ocean except when we want to use it to flush salt out of our soil.
2/ Spain's rivers will like everywhere else reach further with pipe-based hydro-electric conveyance systems.
3/ Spain (like most dry nations) should conduct a 10,000 point nationwide groundwater survey.
This should include both underground rivers spilling into the ocean and stable underground aquifers.
4/ The runoff of Northwest Iberia might be carried down the coastal plane of Portugal and used in the Southern areas of Iberia.
4/ Some of the ample smaller rivers of Perpignan France and other French rivers (on the border of Spain) might be diverted into Spain. Also the Pyrenees mountains are thin and the northern slope is in the over-supplied upper Garonne watershed. We might be abler to divert some of these minor rivers by tunnel into Spain.

Britain's Two new access interchanges
Upavon — Between Swindon and Salisbury. This station connects with:
1/ A line out the southwest peninsula.
2/ A line running to the north that is west of Birmingham and Manchester. Then roughly up the M6 and A74 highway route.
Haverhill — or a bit to the east, right in the current Stansted flight path. This station connects with:
1/ Upavon station mostly via a straight line.
2/ A new station near Tenbury Wells.
3/ A line running between Cambridge-&-Bedford, Kettering and Northhampton, Leicester-&-Coventry, to an interchange near Whitchurch.
4/ A line running north. This passes between Peterborough-&-Spalding, Gainsborough, Selby, Topcliffe, etc.

A note on Chunnel track gauge — The existing legacy Chunnel (under the English Channel) has in inside diameter of 7.6 meters and this obviously limits the size of track gauge used in the tunnel. So 7m gauge trains will not work here. So, let's use the existing system only for the Channel crossings with people getting off and walking across the platform from 7m trains to the much longer 1.4m Chunnel trains. Then they do the same on the other side. And the same happens with freight. Also there is no reason why the legacy tracks have to be 1.4m when the trains are about 2.8m. Let's make the track gauge 2.8m for stability and speed. This is an easy change that will quadruple lateral stability and double operating speed for the trains. Also, perhaps the freight railcars can be 3.5m or even 4.0m wide in the Chunnel to accommodate the new standard 3.5m containers. Also, freight trains do not need evacuation walkways. So these might be wider than the passenger trains.

Areas of north Atlantic nations

Denmark =	43,000-sq.km.
Ireland =	70,000-sq.km.
Britain =	209,000-sq.km.
Germany =	138,000-sq.km.
Greenland =	2,166,000-sq.km.
Ice free Greenland =	410,000-sq.km.

Greenland open for settlement
Greenland is home to only 56,000 people. Let's Use this giant land for something. Let's make a new nation for migrants that is not Denmark. Let Denmark set an example. Greenland has ice free area equal to: 10 Denmarks, or 6 Irelands, or 2 Britains... yet it only has a population of 56,000.

Norway
Let's move Os•low = low mouth to the hill north of Hamar. The extreme focusing of the Oslo funnel is obvious to anyone looking at a map.

Using all the water sinks today
It may take us a couple decades to test them, but I bet there are lots of stable places to store fresh water underground. And I bet that some of the best ones are not particularly wet today.

Fresh water storage
I bet there are lots and lots of places to store agricultural water underground. We really should try to fill them while the sun shines and the world has water to spill into the oceans.

Water schemes make the world richer
To my mind, there is no better system for supplying the world with bio abundance than using the gravity energy in mountain water to get the stuff from where there is too much water to where there is not enough.
The excess water rule

If a nation has excess water that it is spilling into the ocean, then its neighboring nations with insufficient water have a right to come and take that the wasted water and build aqueducts to carry it away. This right to take away the water is however only applicable where:
1/ The receiving nation is obeying the UM population control rules.
2/ The benefactor nation has excess water that it is wasting on the ocean. If the benefactor nation genuinely later needs the water due to a climate shock, it may always keep 2/3 water for itself.

The madness of China's dams over India
At the same time as the West has gone completely and foolishly overboard in valuing human life, China seems to have gone in the other direction for profit. Viz: Covid. China is taking similar risks building dams on rivers flowing through Tibettan lands it has arrogated. Arrogated in modern times, no less. These dams are an extreme hazard for India.

Tibet is a place of watersheds
The previously unclaimed inaccessible Himalayan plateau is a thing of watersheds and tourism. That is its main aspect as far as people are concerned. Nobody can really use the place otherwise. It's just too high up.

Himalayan water most valuable
It is both water and energy. and these both can be kept in stored form atop the Himalaya for very little energy inputs. And by nature, all this water high up must belong to the world and to all who can efficiently use it.

Water from up high,
minerals from down low
Lets get our minerals from low-elevation wastelands and the water from the watersheds.

People should live where it is nicest
The place for people to live is where it is nicest.

Conditional infrastructure
Both the aqueducts and the train system are contingent on mustering a proper broad democracy and obeying the UM's one child policy.

Irrigation works best
where there is a wet season
In total deserts the salt accumulates. Irrigation works best in places that get some rain for some part of the year so the rain can wash the salt out.

The Panamerican rail system
This is the name of a rail line that runs between the Bearing straight, Texas City, Andeo and Argentina:
1/ Fairbanks, Alaska
2/ Northway, Alaska
3/ Haines Junction, NT
3/ Whitehouse, NT
4/ Watson Lake/ Upper Liard, NT
5/ Fort Nelson, BC
6/ Grande Prairie, BC
7 Forrestburg, BC (The Vancouver line, Idaho line, Chicago line and Montreal line interchange here).
8/ Saskatchewan
9/ Saskatchewan
10-20/ There shall be 10 US stations that run where it is flattest east of the Rocky mountains, and the land is most scarcely populated through the Dakotas, Nebraska, Kansas, Oklahoma, and Texas. The last shall be in the Maquiladora zone south of Hebronville TX.
21-25/ There shall be 5 stations in Mexico
26/ Guatemala in its west.
27/ Nicaragua on its western tip.
28/ Costa Rica near Cana.
29/ Santiago, Panama
30/ Chepo, Panama (in the canal zone)
31/ Chigorodo Colombia. (This interchanges with another line running down the west coast of South America with 3 stops (Zarzal, Quevedo, and Piura) on the way to Trujillo, Peru.)
32/ Monteria, Colombia
33/ Bosconia, Colombia
34/ Acarigua,Venezuela. This interchanges with 5 other lines and is the main interchange for South America to the north.)
35-43/ Starting near Acarigua, the **Outfall line** shall have stops near Tinaco, Ortiz, Taguay, Maturin, Tumeremo, Kwakwani, Lipo Lipo, and a last stop at Santana Brazil.
44-49/ Starting near Acarigua, the **Guyana line** shall have stops in Los Canitos, Parque Nacional El Caura, between Motocuruna and Curiapa, Pedra Pintada, (two more stops), Tracua, (one stop) and then the last stop at Santana Brazil.
50-54/ Starting near Acarigua, the **Yanomami line** shall have a stops near Samariapo, Guramoni, Balaio, Tulu Tuloi II, Entre-Rios, Then join with Guyana line.
55-67/ Starting near Acarigua, the Patagonia line shall have stops near Samariapo, Guramoni, Balaio, Forte de Gracia, Igualdade, Cacoal, Tangara da Serra, Corumba, Loma Plata Paraguay, El Indio, Anatuya, Rio Cuarto, and then the last stop at Tornquist Argentina.
68-82/ Starting near Acarigua, the Bolivia line follows the relatively flat areas just east of the Andes with 14 stops, one for each of the main mountain passes into the Andes, and the last one near Santa Cruz Bolivia. The next station is Las Petras, and then the end is at Tangara da Serra.
83-107/ The **Rio De Janeiro line** loosely follows the 230 highway to Jao Pessoa, then the 101 highway south past Recife, Salvador, Rio de Janeiro, Sao Paulo, then the back to the main Patagonia line at Corumba. This line may have perhaps 25 stops
108-115 The **Sao Paulo line** runs from Corumba to Sao Paulo, along the coast to porte Allegre, and then back to

the main Patagonia line at Anatuya. This line may have perhaps 8 stops.
X/ This is 115 new freight interchanges, not counting the many spurs we will surely have in North America.

UM train cities
1/ The interchanges will be the most important cities in the new world. These cities will be the commercial centers and train exchanges. they will have the main international airports.
2/ In locating cities the input from the locals shall be considered, but none of the UM Over-Senators making any decision about the exact location of a UM city shall be from that area.

Bozice freight interchange
This is located about 50km north of Vienna and east of Znojmo:
1/Most of the Czech trains will interchange here.
2/ Most of the Hungarian trains will interchange here
3/ Most of the trains to western Romania will interchange here.
3/ Most of the trains to former Yugoslavia will interchange here.
4/ Italy will interchange here.
5/ Many trains will continue on to south Germany.
6/ UM's backbone line will have an interchange for Germany in Ulm.

India's International interchanges
1) The main international interchange city for India to the north shall be near **Narwana Junction** in Punjab.
2) The main international interchange city for India to the west shall be near **Raniwara**
3) The main international interchange city for India to the east shall be the **Deoghar/ Suri Rajmahal/ Babupur** area.

Stops on the Trans-India rail line
1/ An Interchange where the Amu Darya passes Qarshi, (called Qarshi).
2/ Angor, Uzbekistan
3/ Bagram, Afghanistan.
4/ Pabbi, Pakistan
5/ Gujar Khan, Pakistan
6/ South of Jammu India
7/ There are 10 or 15 stops on the way to Deoghar.
8/ Brahmanbaria, Bangladesh.
9/ East of Bago Burma. (This connects with the Mandalay and Alekon interchanges)
10/ Kanchanaburi, Thailand.
11/ West of Nakhon Ratchasima, Thailand.
12/ Xeno, Laos.
13 North of Dong Ha, Vietnam

Other Indian rail lines

1/ The **West Coast line** shall be a line running from Narwana Junction to Raniwara and down the west coast until it can cross south of Tirupur. Then the line becomes the **East Coast line** and goes up the east coast and joins the main line at Deoghar.
2/ The **Deoghar Line** shall run from Surat to Deoghar.
3/ The **Southern Line** shall run from Vijayawad to Nagpur and the Trans-India line.
4/ The **Chennai Line** runs from Mumbai to Pune and Chennai.
5/ The **Vijayawad Line** runs from Mumbai to Pune, to Hyderabad to Vijayawad
6/ The **Narmada line** shall run from Surat to Patna
7/ The **Agra Line** runs from Surat to Agra and the Trans-India line.

China's main trade hub
1/ The Eurasian line starts in Datong, China's main interchange city with the west. This area is safely up the hill from Beijing.
2/ The rail line from Datong to the Bearing straight (and eventually the Americas) shall be called the Northern line, or the China Northern line outside China.
3/ The rail line from Datong to Vietnam (and eventually India) shall be called the Indochina line.
X/ All three of these lines meet in Datong.

The Eurasian line
From Datong, there shall be stops at follows:
1/ Between Hohhot/Baotou
2/ Between Baotou/Bayannur
3/ Between Bayannur/Wuhai
4/ Near Urumqi,
5/ West of Karamay China,
6/ Aktogaj, Kazakhstan. (interchange for the Trans-India express called Bramagrad.)
7/ Near Karagandy Kazakhstan (Karagandy)
8/ East of Aktobe (Gagarin)
9/ West of Uralsk
10/ East off Rossosh, Northwest of Volgograd. (Interchange for the Axis line, called **Centrograd**)
11/ South of Romny, Ukraine (east Ukraine
12/ North of Zhytomyr, Ukraine (center Ukraine
13/ South of Lutsk (west Ukraine)
14/ Stany, Poland
15/ Jezew Poland
16/ West of Prerov Chechia
17/ Bozice, Chechia
18/ Eggenfelden
19/ Ulm
20/ Eventually this line reaches Algeciras where it offers a bypass re-routing for trade with Africa that bypasses the Mideast.

The Axis line

1/ West of St. Petersberg, Russia
2/ Kaluga, Russia
3/ East off Rossosh (centrograd)
4/ Near Elista, Russia
5/ North of Khasavyurt, Russia
6/ Northeast of Shirvan, Azerbaijan
7, Rasht, Iran (Imran)
8/ Gorgan, Iran
9/ Ashgabat, Turkmenistan
10/ Qarshi (interchange for Trans-India express)

The Qarshi line
1/ This is a slow freight that reduces the power of Iran to block India's trade. It is mostly a backup line.
2/ Start at Qarshi interchange.
3/ Stop in Urgench
4/ End in the station near Aktobe Kazakhstan

Two+ means of trading egress
The rail line going up towards Morocco and Spain is important for making it hard to have war for trading profit. As much as possible, we want to design our transport systems so there is always another way. This way it is twice as hard to dam up trade for profit. And if we have three ways, then is 3X as hard.

No scrapping of container ships
As the rail system replaces the ships, they shall be purchased by the governments of the world for crisis pricing and kept in fresh water locations to preserve them better.

Water use priorities
1st: Home uses come first.
2nd: Dry industry.
3rd: Wet industry.
4th: Waterproof pot plants.
5th: Drip irrigation.
6th: Pipe to place irrigation.
7th: Overhead watering.
8th: Wasteful flood irrigation.
Maybe they all have different water prices by volume.

Toxic zones
Arabia and Baja California will be where all the world's most toxic waste will go. For the US, Australia, India, and China, it goes in their western deserts. For South America, it goes in the desert portions of Argentina, down south near the point where few people live. For Africa, it is in the northern desert, where it never gets wet. Surely these are also the most logical place to put the noxious manufacturing. Surely we don't need any of the ash or outfall getting into our fresh water supplies.

The new trash dump
Are you going to keep living in that flood zone? No, you will move to high ground. And where will you dump your garbage? You will do this where it is already most polluted right? So many of the old cities will become trash dump areas, especially the most polluted places. So there is less need to tear them down.

Ethnic Alignment
This is where the borders of nations and citizenship are aligned to the ethnic groups.

Immigration quottas
To prevent UM nations from becoming a colony of one nation or region, we shall have maximum immigration quotas like Singapore has. So let's say that for UM colonies, no more than 1/4 of the immigrants may be from any one nation.

Underground drinking water systems
This idea appears reasonable, but it is actually a dumb idea even in the developed world. The safety of the water is a critical life or death sort of thing. The unsightliness of water lines doesn't really matter in comparison. Also, there are lots of problems with the effectiveness of back-flow preventers with regard to pathogen contamination in fresh water systems

How much water does that spot use?
Everyone has a personal GPS tracker in their phone. So let's have people declare where they are using their irrigation water by walking the perimeter of the use area. The system records the use and matches it to the fields. Then we have this very precise map of how much water is being used and where. Then we use this data to move people to places where the water use is most efficient. We really should have a clear understanding of this, so we can make smart crisis decisions with regard to where the agricultural water goes if the water ever gets real scarce.

Pipe-hydro must filter the water at the inlet
1/ There must first be a catchment basin with some form of filtration.
2/This filtered material is probably quite nutritious for plants. Maybe it has its own pipeline conveyance system.

Aqueducts are vulnerable to soil heave
Aqueducts are like anything else we put on the ground that is dynamic or heavy or needs to remain precisely aligned. Depending on the soil, rain skirts may greatly improve longevity.

Standard rainfall map colors
These depict average centimeters per year of rainfall.
Pink = 10 or less cm/yr
Red = 20 or less cm/yr
Red orange = 30 or less cm/yr

Orange yellow = 40 or less cm/yr
Yellow = 50 or less cm/yr
Green Yellow = 70 or less cm/yr
Green = 100 or less cm/yr
Turquoise green = 150 or less cm/yr
Teal = 200 or less cm/yr
Dark blue = 250 or less cm/yr
Bright violet = 300 or less cm/yr
Light violet = 400 or more cm/yr

Topo maps done right
Let's do a public no-login version of Google topographic maps but with:
1/ Much have precision on the zoom. Let's have 10m contour lines possible.
2/ When viewing larger areas, the contour lines appear as technicolors, like on a physical map. This is so these maps will be easier to understand.
3/ Lets have a slide-bar that defines the colors according to a range between any two elevation points. Then the other parts that are outside this range get black and white or various shades of green.
4/ The way Google currently presents the elevations is beyond reckless and it looks a bit like sabotage.

_Groundwater depth maps
Maybe the counties and the UM should keep statistics on groundwater depth, estimated volume, and toxicity worldwide. Let's have some daylight here on this critical environmental statistic.

UM agriculture high school online
The UM should assemble lots of agricultural information and make a tutorial websites (translated into every big language) for all sorts of agricultural knowledge like:
Pipe irrigation
Open irrigation
Low budget irrigation
High budget irrigation
Water allocation pricing
Crop pests and pesticides
Health issues for farmers
cost/benefit calculations for automation
Equipment sharing entities
Community financing of equipment

X-prize farm lottery
We want farmers all over the world to be looking for the most salt-tolerant, the most high altitude tolerant, the most drought tolerant, and the highest yielding crops. So we will offer Senate payments for these things.

Precise routing
I have been a bit precise about routing for trains and aqueducts. I did this with the intent that it would help:
1/ Get the projects to be completed faster.
2/ Reduce corruption and debate.
3/ Reduce poor routing.

Slate as terrace edge waterproofing
Maybe we use long lasting slate rectangles and pie slices at the terrace edges. We should figure out how much evaporation is reduced by this. This is sort of a one dimensional thing that affects a whole area, and it is also done once and forever. So it need not save that much water. But as the soil gets dryer, more and more of the evaporation will probably come from these terrace edges that remain much wetter than the flat areas. So maybe by putting slate (or plastic) down at our terrace edges and berms we reduce evaporation area by 2%, but in a place that has 10X the evaporation rate in the critical dry season. Thus evaporation is reduced by say 20% in the dry season, and the water goes that much further. I don't know how true this is, but it seems like it should be worthwhile studying for desert terrace farming.

Dirty river mud as fertilizer
What if our sluicing pools had a way to mix-in super-fine river silt to the water. Here I refer to the fine and doubtless organic-rich stuff that stays suspended for a long time, like in say the Mekong, giving the river its brown color. What if we mined this from rivers and used it as a natural water fertilizer? This way we can synthesize the Nile's fertilizer effect.

The master key of population
The rich nations would like to help the poor ones. It is just that there is a conflict where they don't want to just have a bigger problem due to increased population. Therefore, we really need to get control of the populations of the poor nations so we can end poverty.

The power of hope
Can we now have hope that mankind:
1/ Can manage its population.
2/ Can end desperate pro•verti (poverty).
3/ Will stop fighting with itself and end war.

Break up
I look at the corruption of the US and know that it is worse in the giant and poor nations of China and India. You will be no more vulnerable to invasion if you break yourselves up financially. But your governments will become more financially efficient. And also your leaders will be unable to martial sufficient forces for aggression. You can have mutual defense treaties and a shared military. But you should break yourselves up. India will be 28 financially independant nations, and China will become 23. Thus 2 nations will become 51. This would have completely changed the balance of power at the old UN and its 1-

nation, 1-vote democracy. Also, Pakistan will become 5 nations, and Indonesia will be 7 nations.

lese majeste
No UM member state shall have any crime of lese majeste for insulting either royalty, authority figures, or religion.

Citizenship in a UM nation
It does not come with any visa or immigration rights to any nation, or any other part of the world.

The Mid-Atlantic Islands
Perhaps the Azores, Madeira, and Cape Verde, can be a European version of the Hawaiian Islands, but with more options.

UM standards
All new toilets worldwide will be interchangeable with all supply lines and valves. The same will go for our sink plumbing, our electric outlets and as many things as possible in our economy. The valves can be of all sorts of designs, but the fittings are all the same size and the threads all match.

The Weeu
This is another name for the people have cleared away from Ishtar and Islam. This means “We•good”, but also “I work for a unified mankind based on truth, light, openness, and observable measurable reality

Let’s change the matrix
The poor think they must have many kids to thrive. But the west thinks: “You will just have more kids if we help you.” So people don’t help the truly needy of the world, and total poverty remains a problem. Instead, we should change the matrix so it works and so the poorest people don't have lots of kids.

Evacuation places
The people living in tsunami funnels and the Pacific plate, and those living in the furnace cities of Phoenix humor, El Paso, and the desert cities of northwest Mexico. There really shouldn’t be cities in these places. There is plenty of good land elsewhere. There really is no need to live in these places. Let's cut off the various districts of these places at a date certain decades hence, and let's not have cities in locations that can't sustain people, and locations that are death-trap locations.

Can't sustain people comes first
Death trap comes second.
The rich nations will evacuate both. But the poor nations will first see the evacuation of the can't sustain people locations. Then after this, there will be the evacuation of the poor living in death trap locations.

UM food is colored
The UM food is lightly tinted with a harmless vegetable colorant. This is to discourage its diversion and sale. It may also contain generally harmless nano markers.
It should be a serious crime for someone that is not on UM food aid to have UM packaged, or UM tinted goods.

UM kid tablets
1/ You can replace the battery, but you can't repurpose the device. It is also very hard to take them apart without destroying the monitor.
2/ You must login to the UM site for service. They can’t be used for anything except daily logins to the UM education website. Thus the tablets have no value to anyone but the kid.

Degrees of neutrality
Level-0 = strict neutrality no contact
Level-1 = + Food and medicine aid
Level-2 = + Take in refugees
Level-3 = + Information sharing
Level-4 = + Industrial supplies
Level-5 = + Sell arms
Level-6 = + Give arms
Level-7 = + Send men to support
Level-8 = + Send men to fight or join fight

Chinese coal stinks less than European coal
Are people burning cleaner coal in China? Have people been tricked into burning the dirtiest coal possible in any other nation?

No dirty industry in big cities
Now that we have 300kph trains that leap across distance, we can say that all dirty industry and all the power plants and the smoke stacks must be located outside and away from the communities. This needs to be so for both Norway and in Mali.

Primary and secondary zoning
Primary zoning is the separation of noxious uses from everyone else. After this, it is a huge step down to the frivolous secondary distinctions that the City of San Francisco (for example) is making about this sort of use/ intensity or that one.