Remembering an Old Friend

WATER FOR PAKISTAN

DEDICATED TO MY GRANDFATHER, CHIEF ENGR: FATEH ULLAH KHAN GANDAPUR - WHOSE WORK INSPIRED THIS GRAPHIC STORY.

BY: SARA HAYAT

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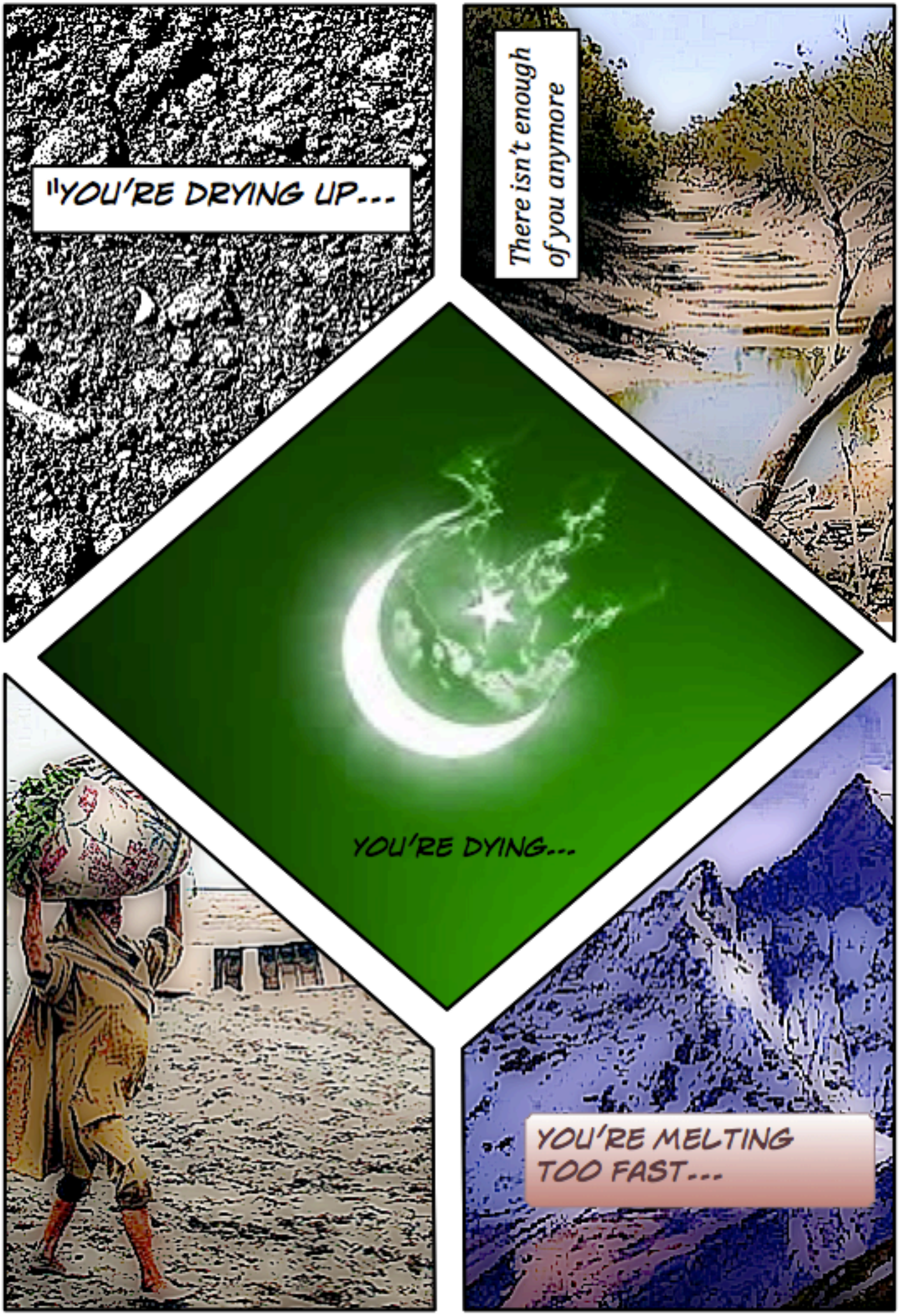
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There isn't enough of you anymore
YOU'RE DYING...
YOU'RE MELTING TOO FAST...

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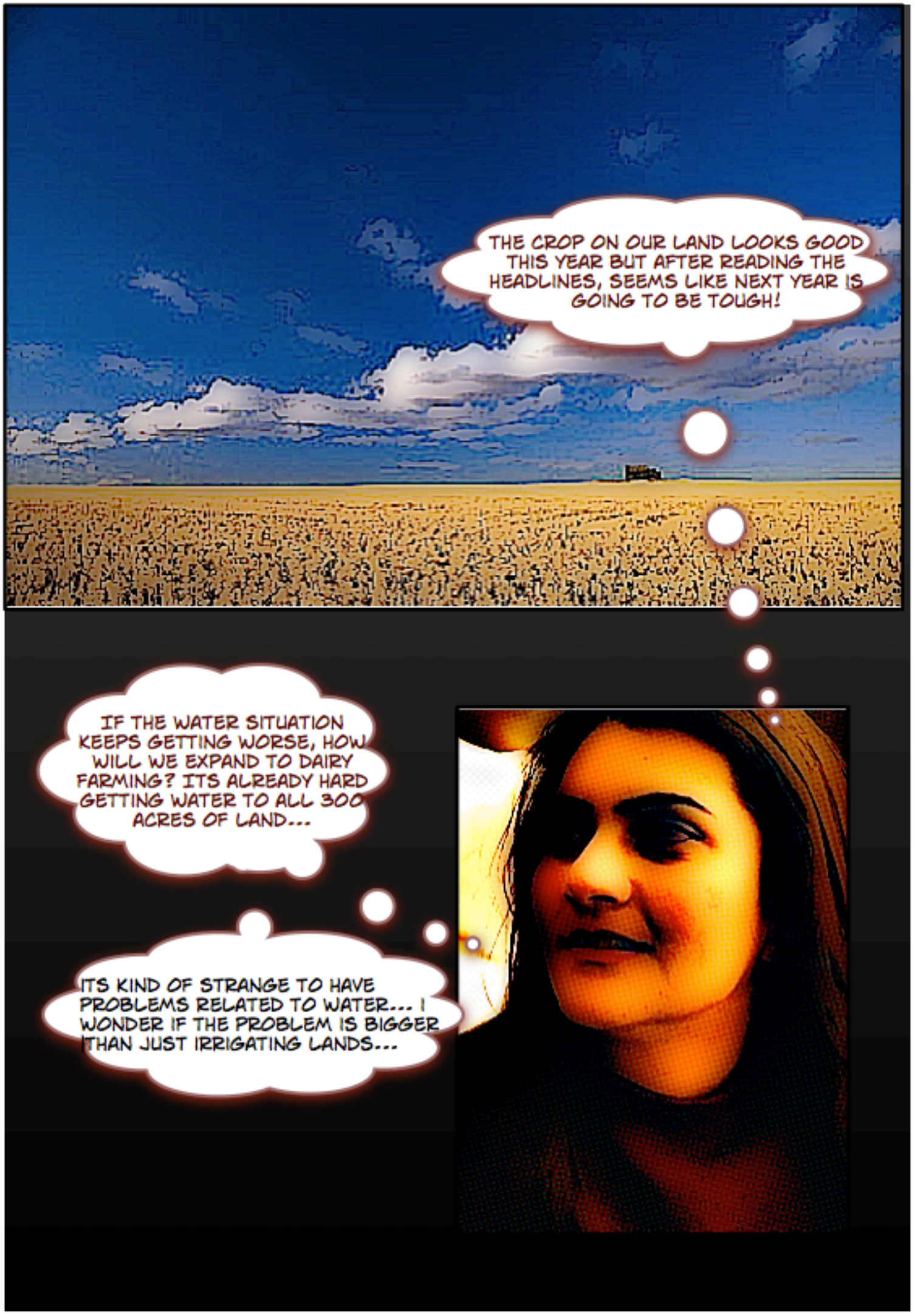
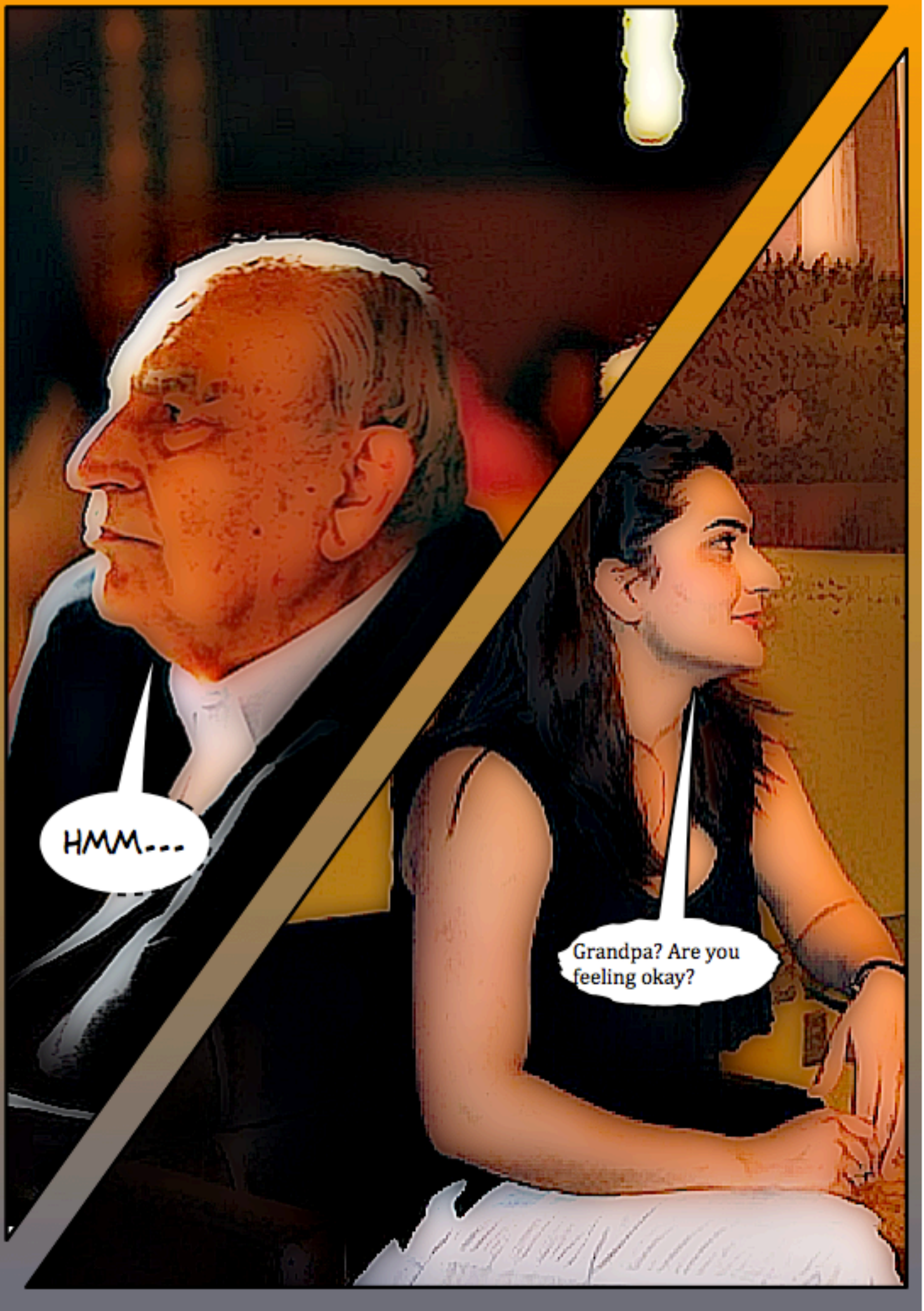
Water Shortage in Thar, Pakistan, a desert area that remains drought for the majority of the year. Thar, Pakistan. 13/06/2010


THE CROP ON OUR LAND LOOKS GOOD THIS YEAR BUT AFTER READING THE HEADLINES, SEEMS LIKE NEXT YEAR IS GOING TO BE TOUGH!
IF THE WATER SITUATION KEEPS GETTING WORSE, HOW WILL WE EXPAND TO DAIRY FARMING? ITS ALREADY HARD GETTING WATER TO ALL 300 ACRES OF LAND...
ITS KIND OF STRANGE TO HAVE PROBLEMS RELATED TO WATER... I WONDER IF THE PROBLEM IS BIGGER THAN JUST IRRIGATING LANDS...

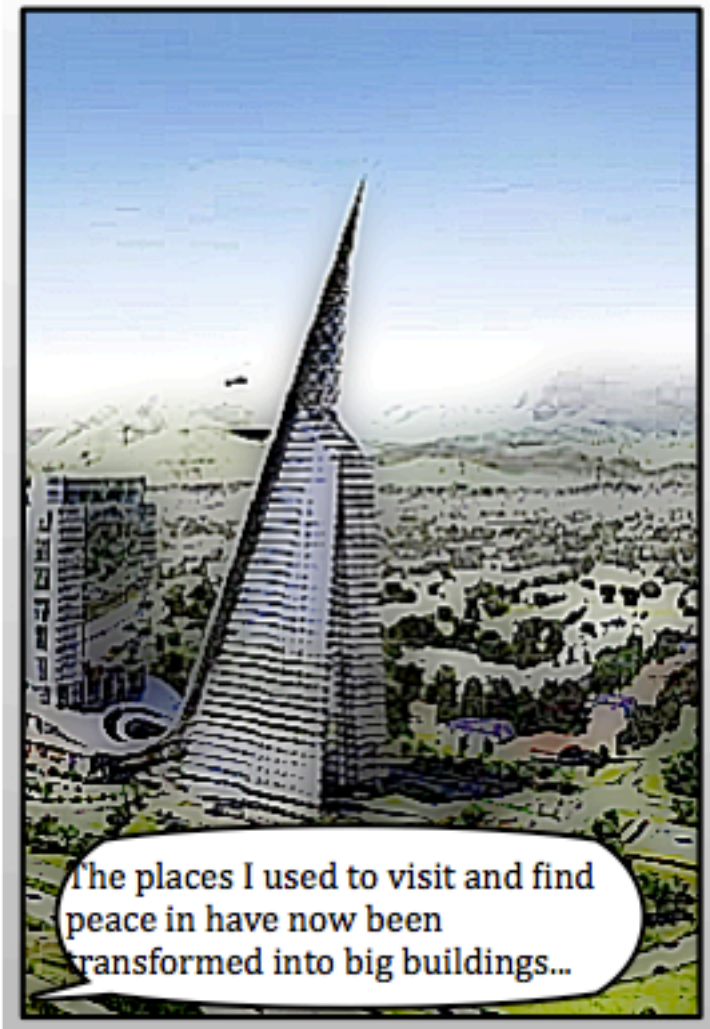

SO THE PAKISTANI GOVERNMENT HAS ANNOUNCED THAT THERE'S GOING TO BE 15 HOURS OF POWER OUTAGE EVERY DAY. LIKE THE ENERGY SITUATION WASN'T BAD ENOUGH.
I WONDER WHAT THE INDUSTRIES ARE GOING TO DO? AND WHAT'S THIS, ANOTHER SUICIDE BOMBING IN PESHAWAR. WHAT WILL BECOME OF PAKISTAN?
I WONDER IF ITS SUCH A GOOD IDEA TO INVEST IN DEVELOPING A DAIRY FARM IF THE COUNTRYS SITUATION KEEPS GETTING WORSE...


HMM...
Grandpa? Are you feeling okay?

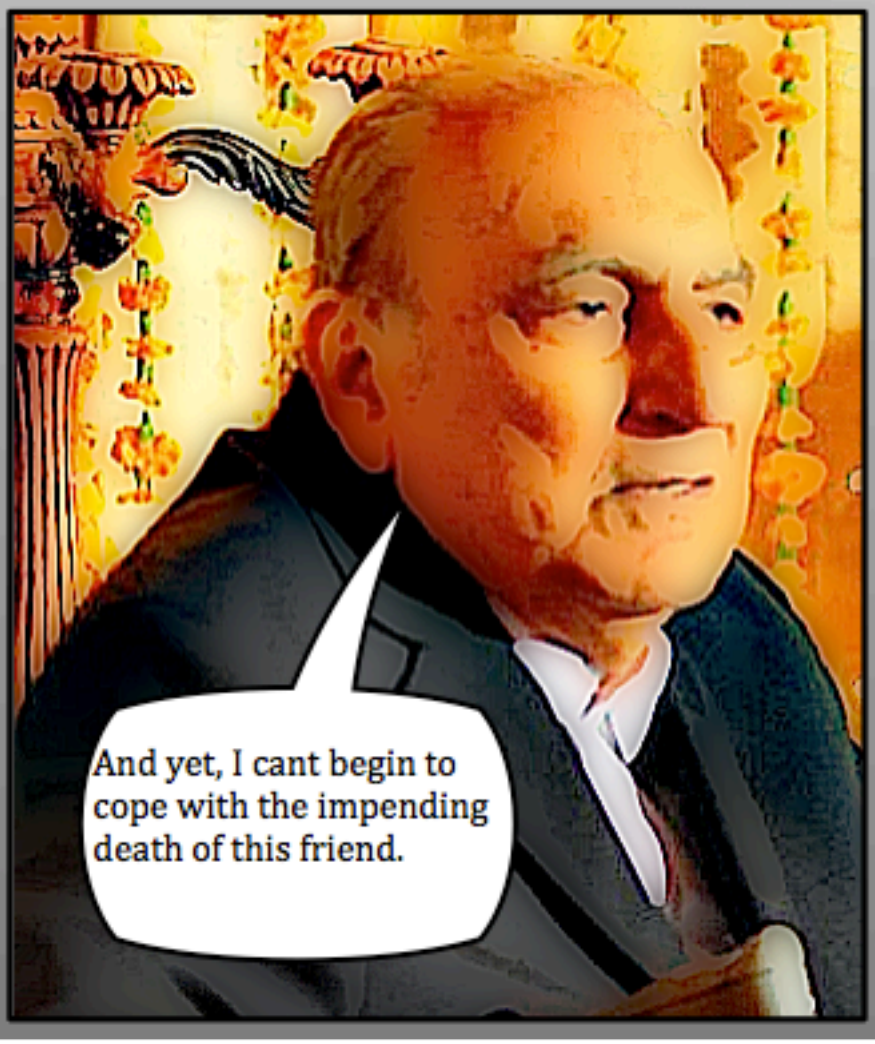

Yes, yes I'm okay... But its just that, a dear friend is dying


Oh no, im so sorry to hear that!

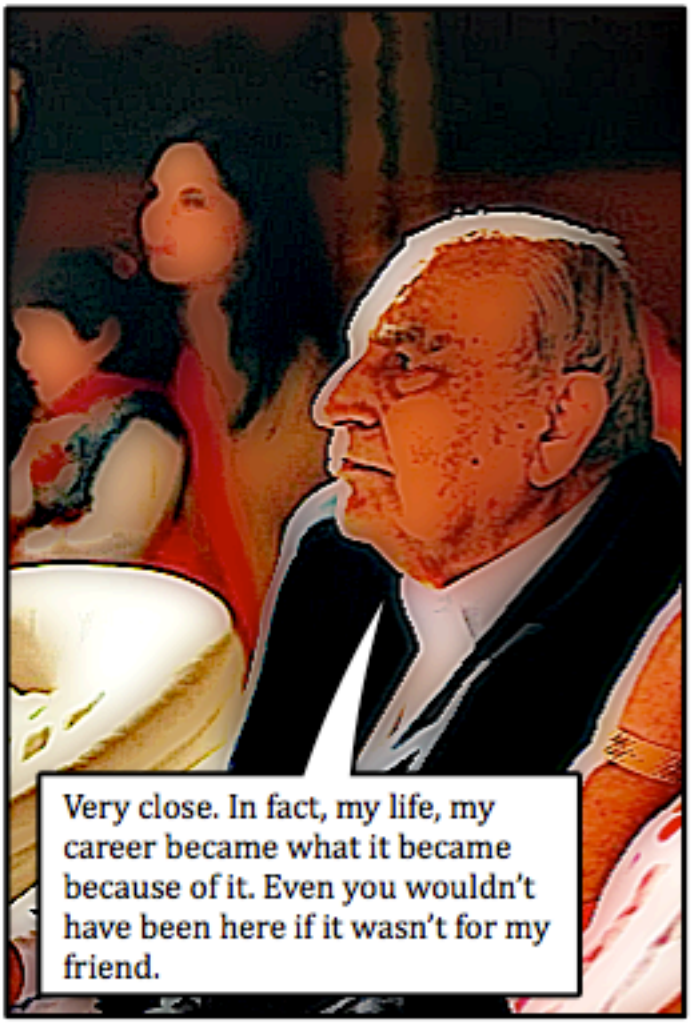

You'd think at my age, death would be an all too familiar topic. The past two generations, things have changed so much. The people that I once knew are no more. (cont)


The places I used to visit and find peace in have now been transformed into big buildings...


100
...buildings that house technologies that I couldn't even have imagined when I was your age.


And yet, I cant begin to cope with the impending death of this friend.

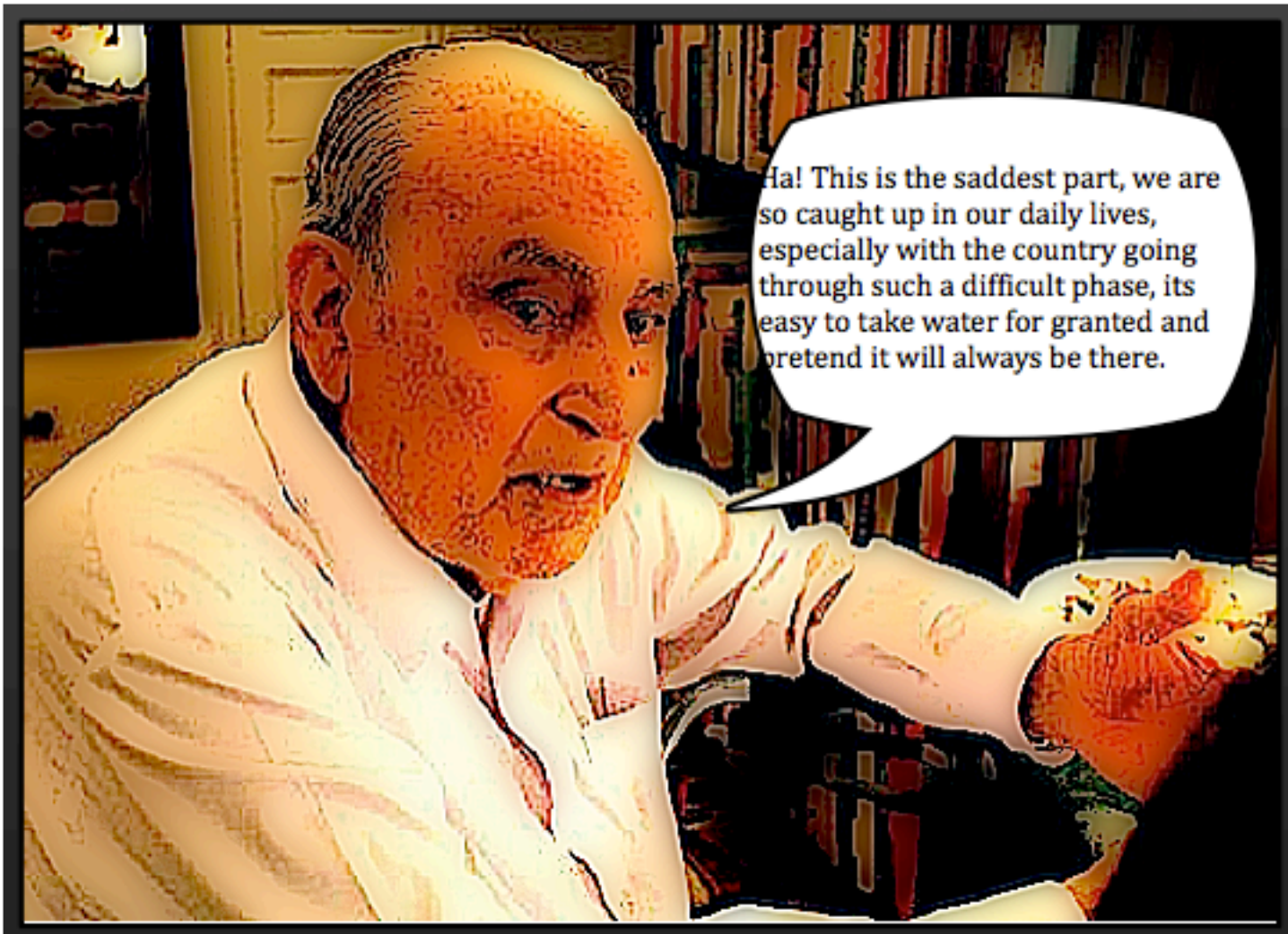

Sounds like the two of you were close...


Very close. In fact, my life, my career became what it became because of it. Even you wouldn't have been here if it wasn't for my friend.


Who is it Grandpa!

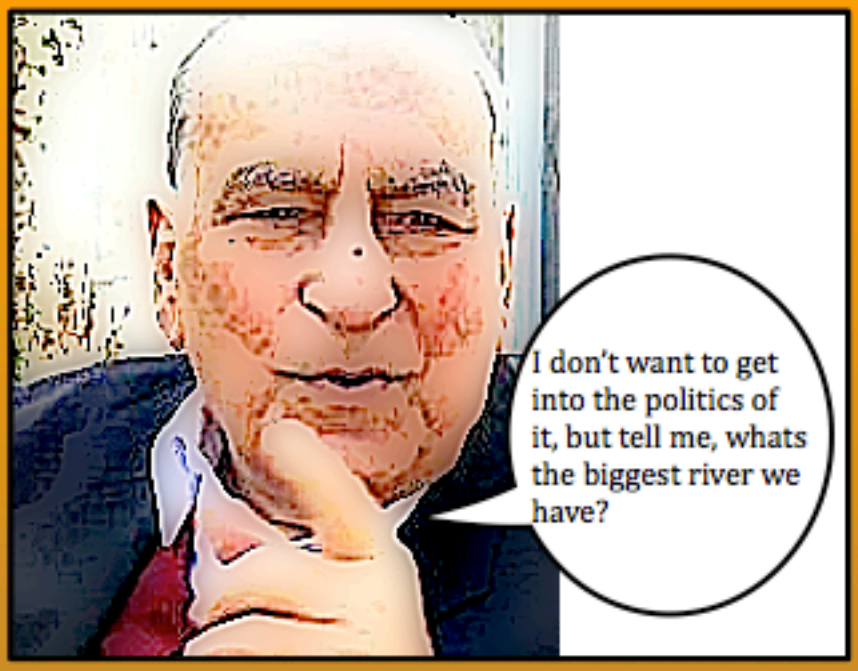

WATER

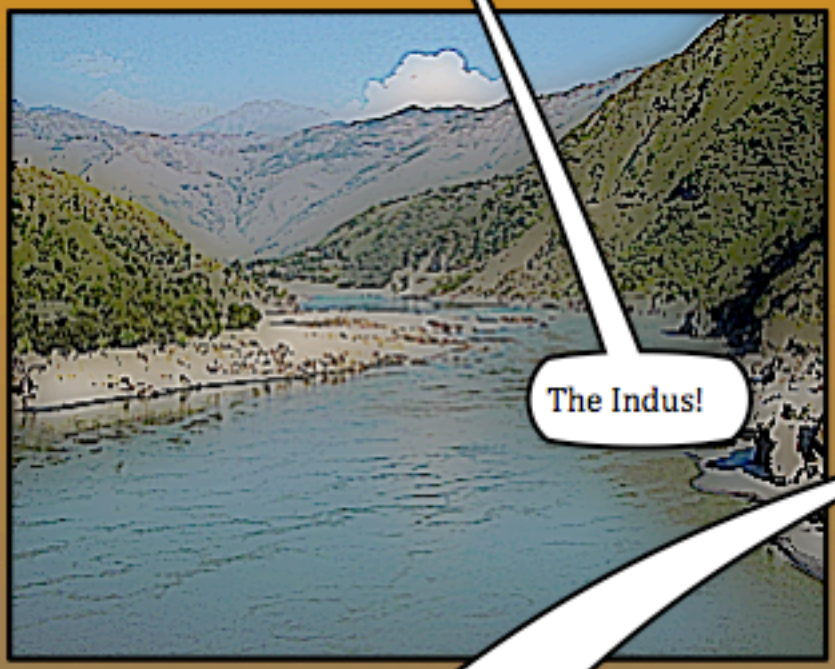

Water? Are you sure you're feeling okay?



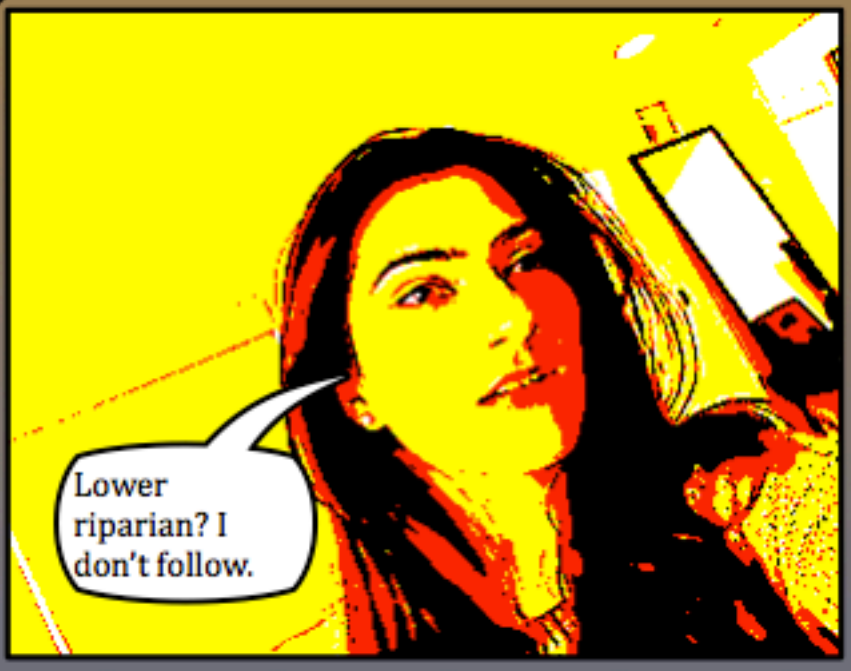
I remember, after graduating from Aligarh University, which was in India. This is before partition we're talking, I got a degree in Engineering, with a focus on dams and reservoirs. I joined my profession in 1948, a year after the partition and discovered 12 mega dams - which are very large dams that usually houses a hydroelectric power plant - during my career.

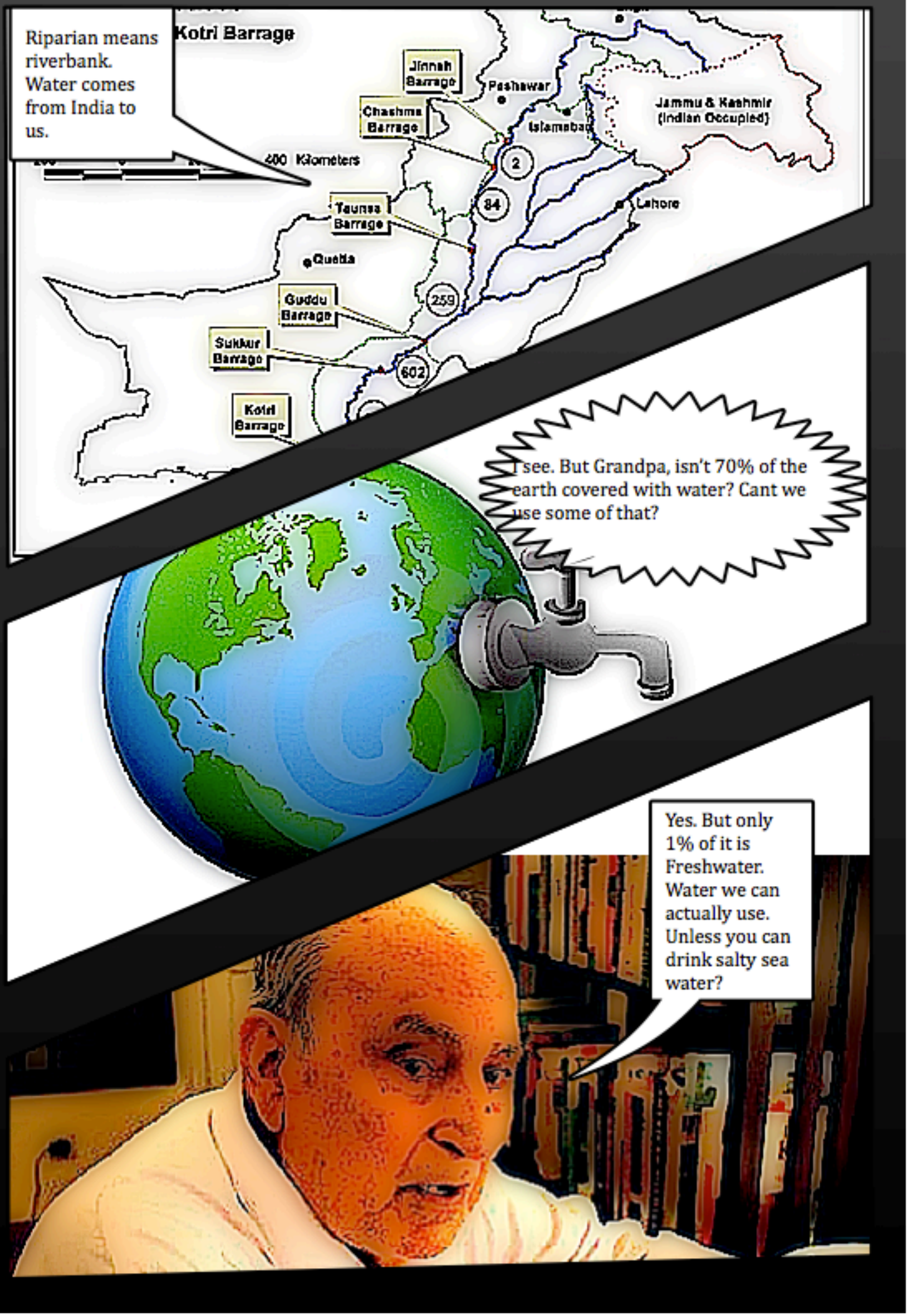

That's a lot of dams!
Water gave me livelihood. It sustained us, gave us energy and helped us reserve water as well.

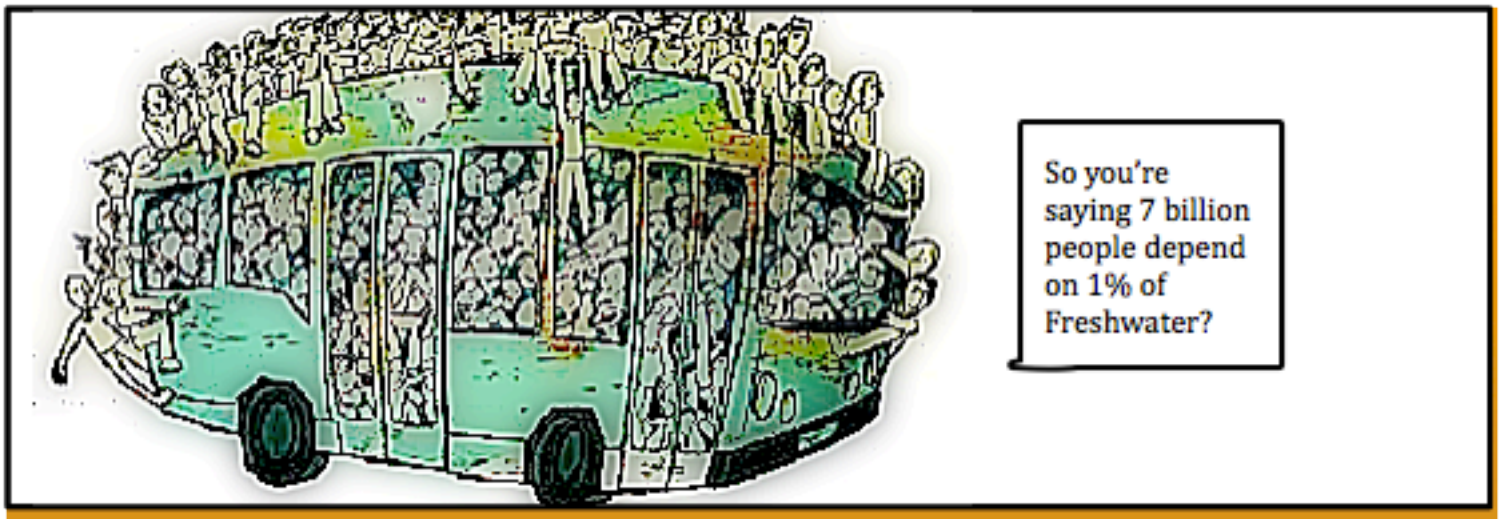


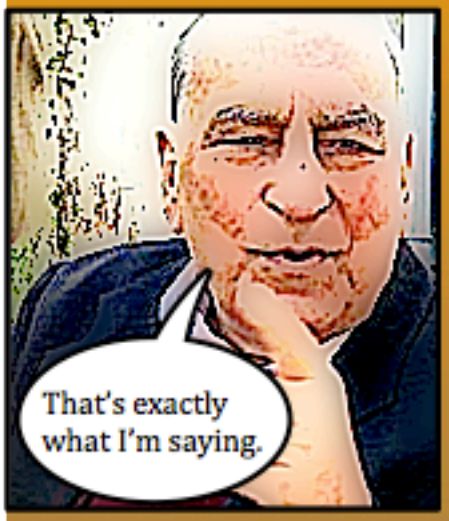


Yes! The Indus River, which comes from the Himalayas, travels through India and then Pakistan and finally empties into the Arabian sea. Since we're the lower riparian, we needed to build structures that would help us conserve some water.




Riparian means riverbank. Water comes from India to us.
Kotri Barrage
Jinnah Barrage
Chashma Barrage
Taunsa Barrage
Guddu Barrage
Sukkur Barrage
Kotri Barrage
Peshawar
Islamabad
Lahore
Quetta
Jammu & Kashmir (Indian Occupied)
400 Kilometers
2
84
259
602
I see. But Grandpa, isn't 70% of the earth covered with water? Cant we use some of that?
Yes. But only 1% of it is Freshwater. Water we can actually use. Unless you can drink salty sea water?

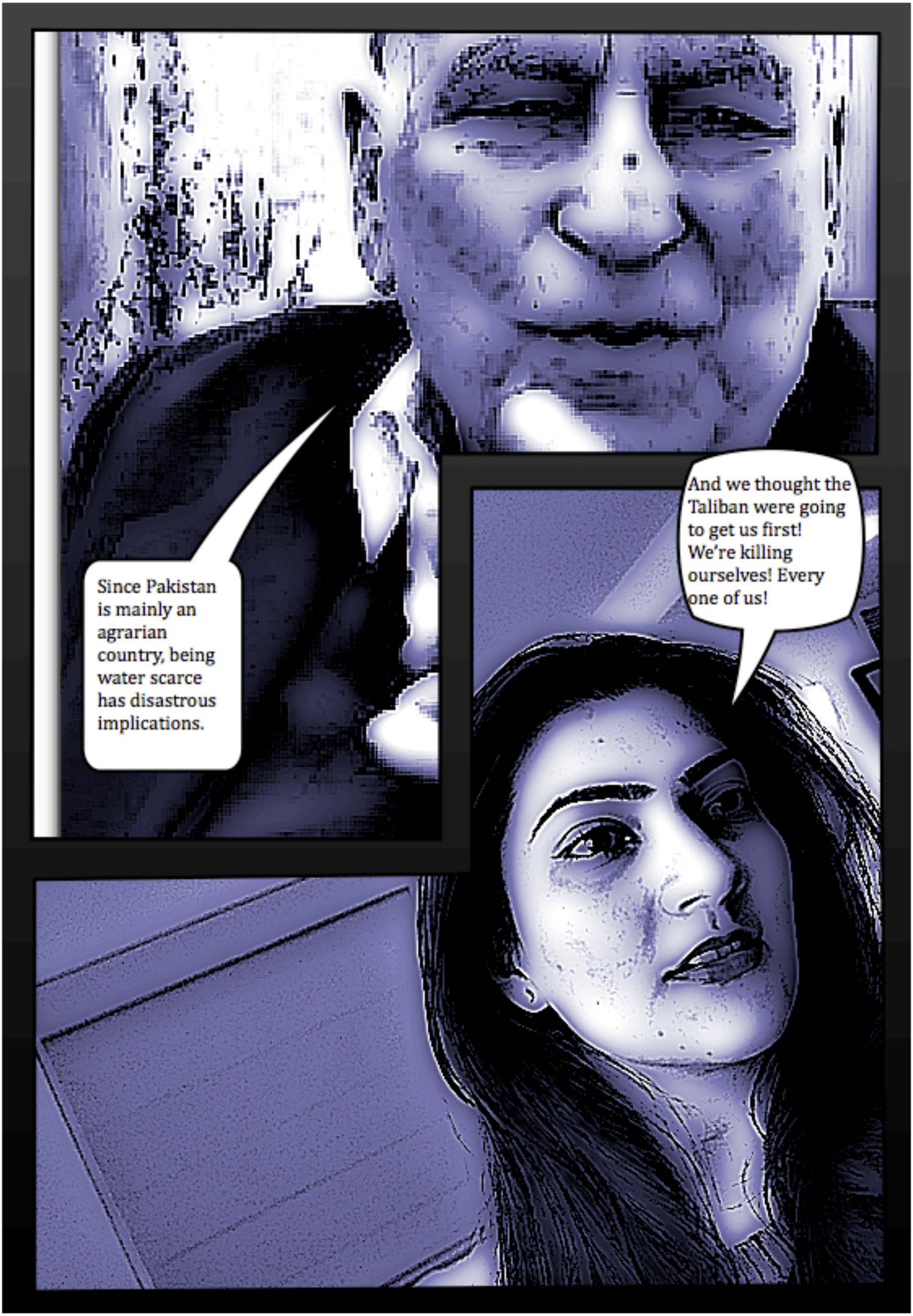

So you're saying 7 billion people depend on 1% of Freshwater?

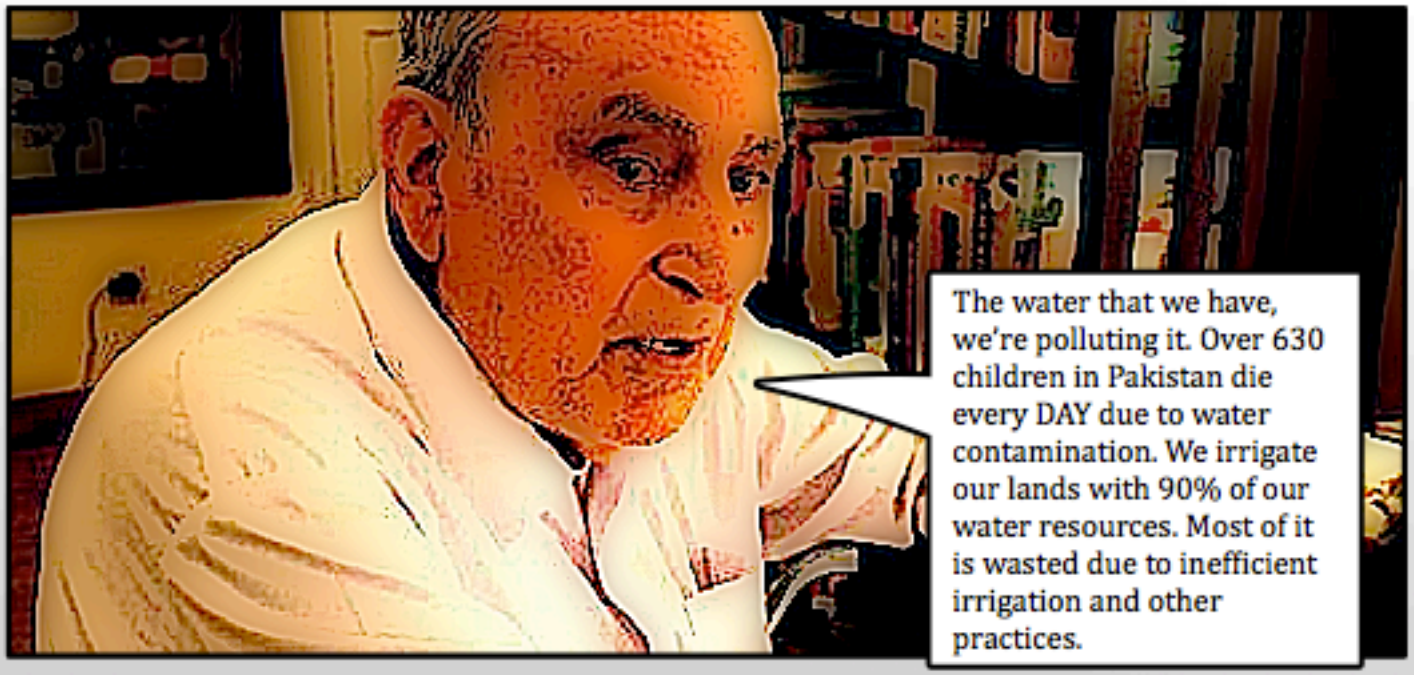

That's exactly what I'm saying.


Normally, this 1% can easily feed the entire planet but our recklessness and ignorance is causing this amount of water to run out. It is estimated that Pakistan will be a water scarce country by 2020!


What are some implications of the country being water scarce?
It means that there wont be enough water to drink or to irrigate the lands! If there is no water to irrigate the land there wont be any food!
We wont be able to neither feed the country nor export goods!


AND I THOUGHT FARMING AND DAIRY WAS A LUCRATIVE BUSINESS IN PAKISTAN... IF THERES NO WATER THEN WHAT WILL I DO WITH ALL THAT LAND? MAYBE PUMP WATER FROM THE GROUND?

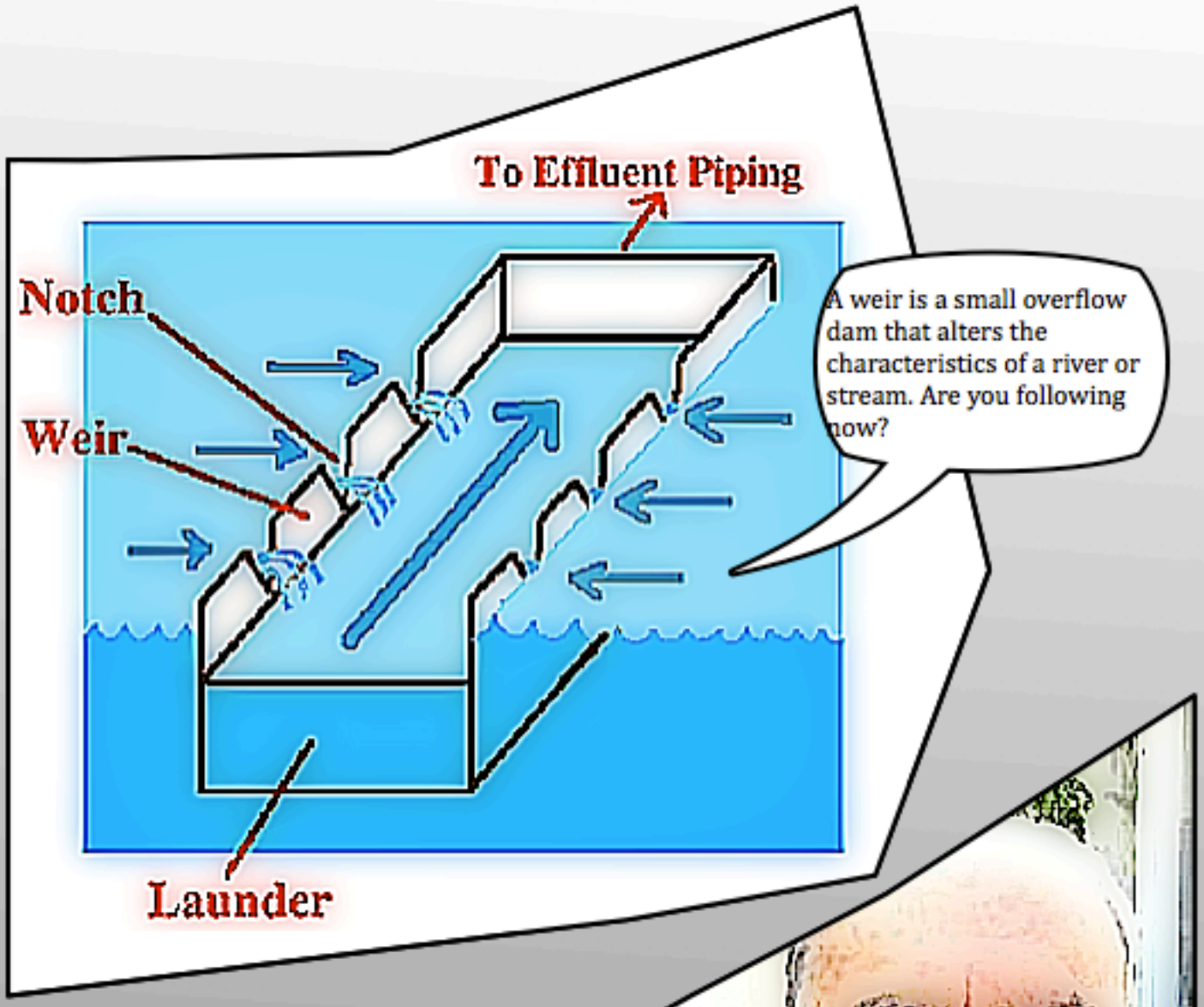

Since Pakistan is mainly an agrarian country, being water scarce has disastrous implications.
And we thought the Taliban were going to get us first! We're killing ourselves! Every one of us!

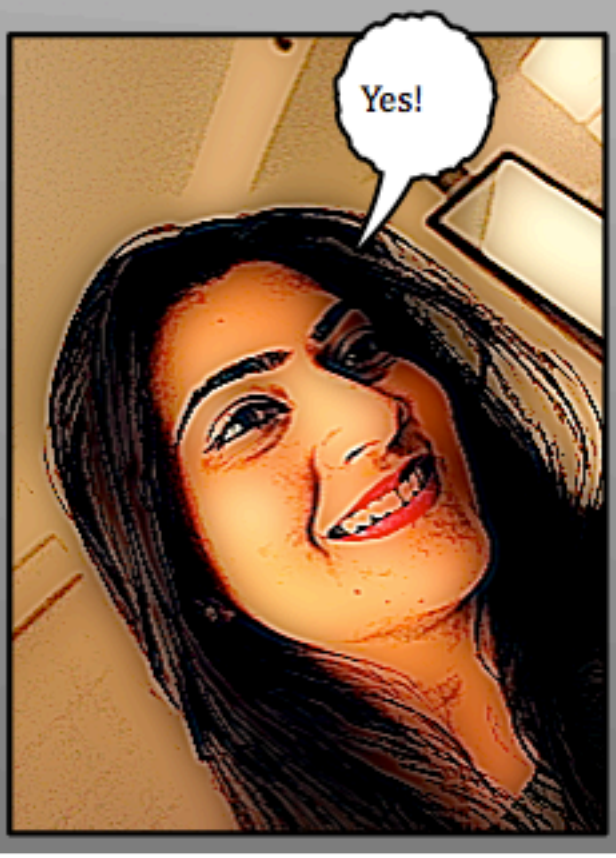

The water that we have, we're polluting it. Over 630 children in Pakistan die every DAY due to water contamination. We irrigate our lands with 90% of our water resources. Most of it is wasted due to inefficient irrigation and other practices.

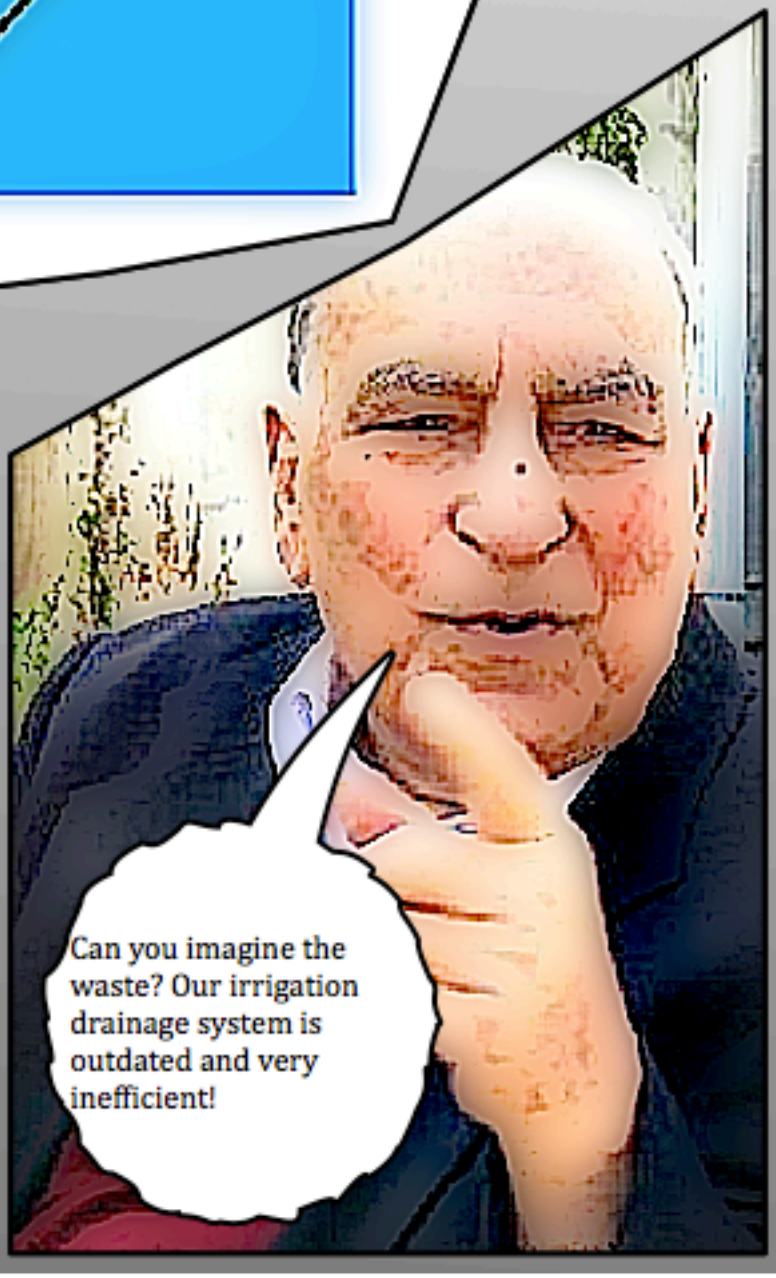

Oh now you've got me started! Its not just one thing, can you guess a few

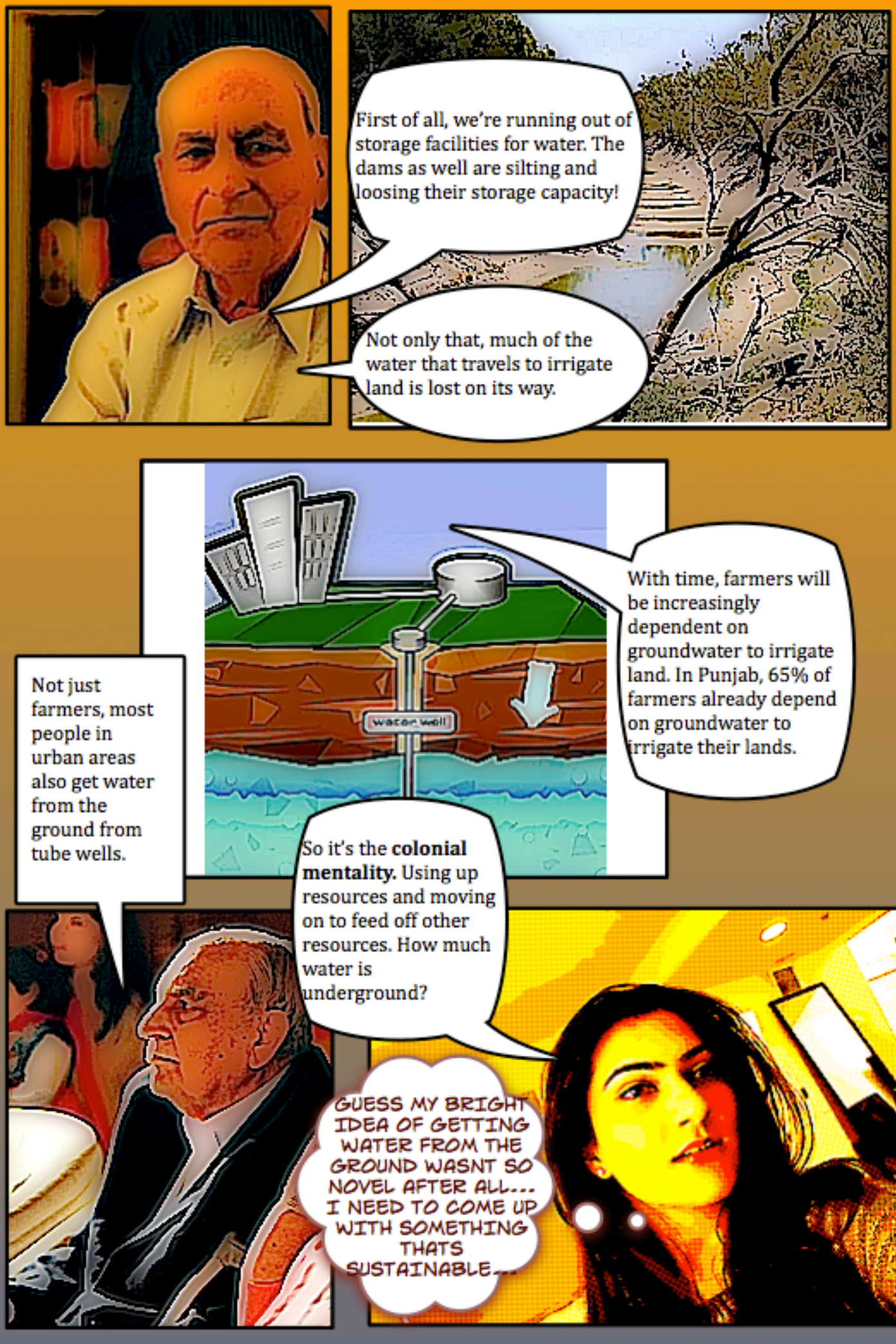

So I guess after this talk, my long showers will be cut down!

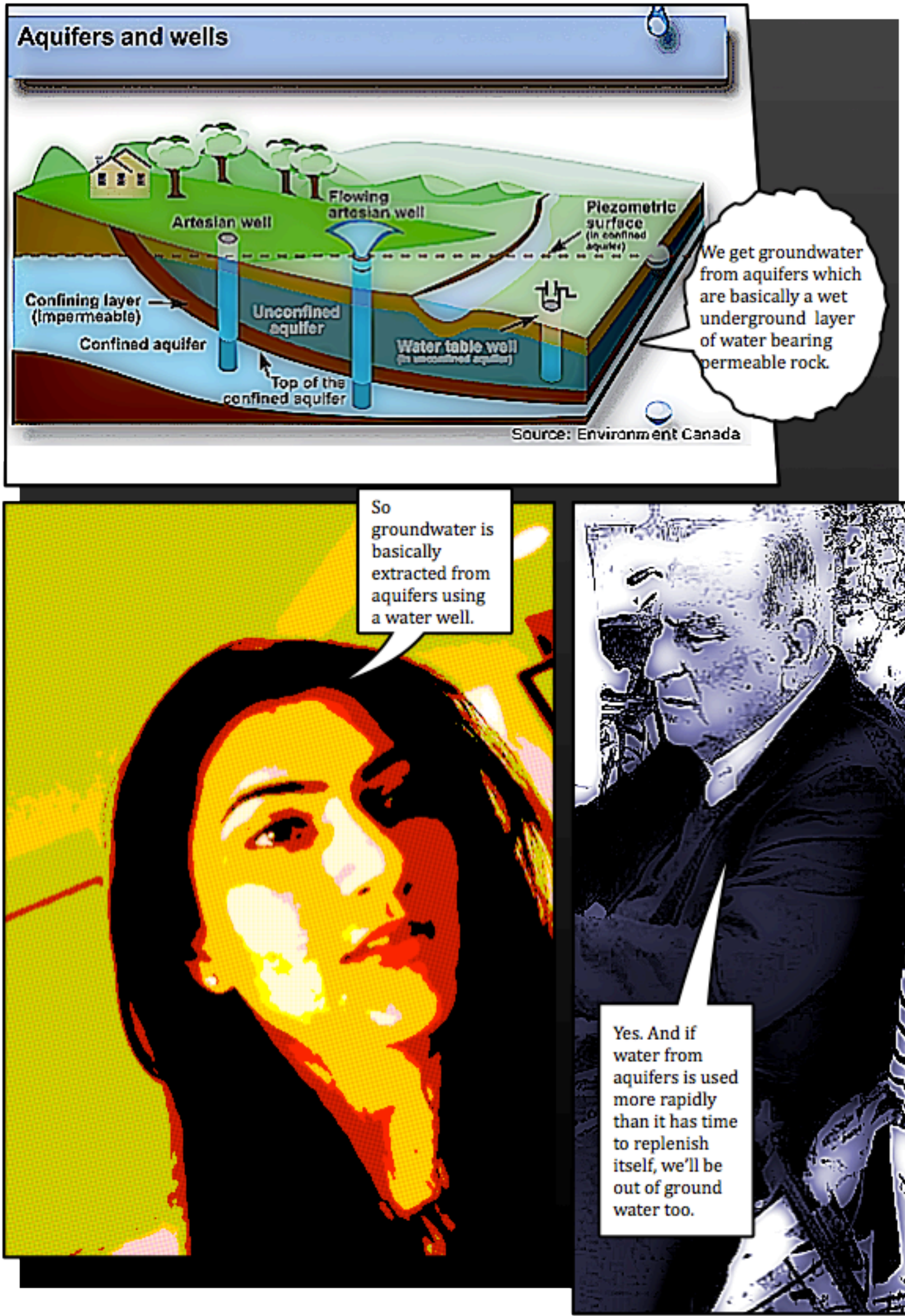

Well, Im guessing the way we irrigate our crops isn't very efficient?
Yes! It roughly requires 104 million acres feet of water to irrigate our lands. Of that 104, 48 million acres feet (MAF) of water is lost due to bad water management.
That's a lot of water! But what kind of bad practices are we talking about? I'm not even sure how people irrigate all the agriculture land to begin with!
Normally, people just flood their lands with water from dams, barrages and weirs!


To Effluent Piping
Notch
Weir
Launder
A weir is a small overflow dam that alters the characteristics of a river or stream. Are you following now?


Yes!


Can you imagine the waste? Our irrigation drainage system is outdated and very inefficient!


First of all, we're running out of storage facilities for water. The dams as well are silting and loosing their storage capacity!
Not only that, much of the water that travels to irrigate land is lost on its way.
With time, farmers will be increasingly dependent on groundwater to irrigate land. In Punjab, 65% of farmers already depend on groundwater to irrigate their lands.
water well
Not just farmers, most people in urban areas also get water from the ground from tube wells.
So it's the **colonial mentality.** Using up resources and moving on to feed off other resources. How much water is underground?
GUESS MY BRIGHT IDEA OF GETTING WATER FROM THE GROUND WASNT SO NOVEL AFTER ALL... I NEED TO COME UP WITH SOMETHING THATS SUSTAINABLE...


Aquifers and wells
Flowing artesian well
Artesian well
Piezometric surface (in confined aquifer)
Confining layer (impermeable)
Unconfined aquifer
Confined aquifer
Water table well (in unconfined aquifer)
Top of the confined aquifer
Source: Environment Canada
We get groundwater from aquifers which are basically a wet underground layer of water bearing permeable rock.
So groundwater is basically extracted from aquifers using a water well.
Yes. And if water from aquifers is used more rapidly than it has time to replenish itself, we'll be out of ground water too.


It sounds like we'll be out of water sooner than we'll be out of fuel! At least we have alternatives for fuel, but what's the alternative for water!
That is true! But groundwater can be replenished after adequate rainfall.
Would monsoon rain and excessive flooding qualify as adequate?
Yes it would. But then monsoons are usually followed by severe drought.
In school, my teacher talked about floods in Mugadishu, a place in Africa, where severe flooding happened followed by severe drought after 3 weeks! We have the same situation here.
WITH THE MONSOONS THAT WE HAVE EVERY YEAR, ALL THE RAIN WATER IS WASTED... IT SOMETIMES FEELS LIKE WE HAVE THE TOOLS TO OVERCOME OUR PROBLEMS BUT WE JUST DONT KNOW HOW TO USE THEM...

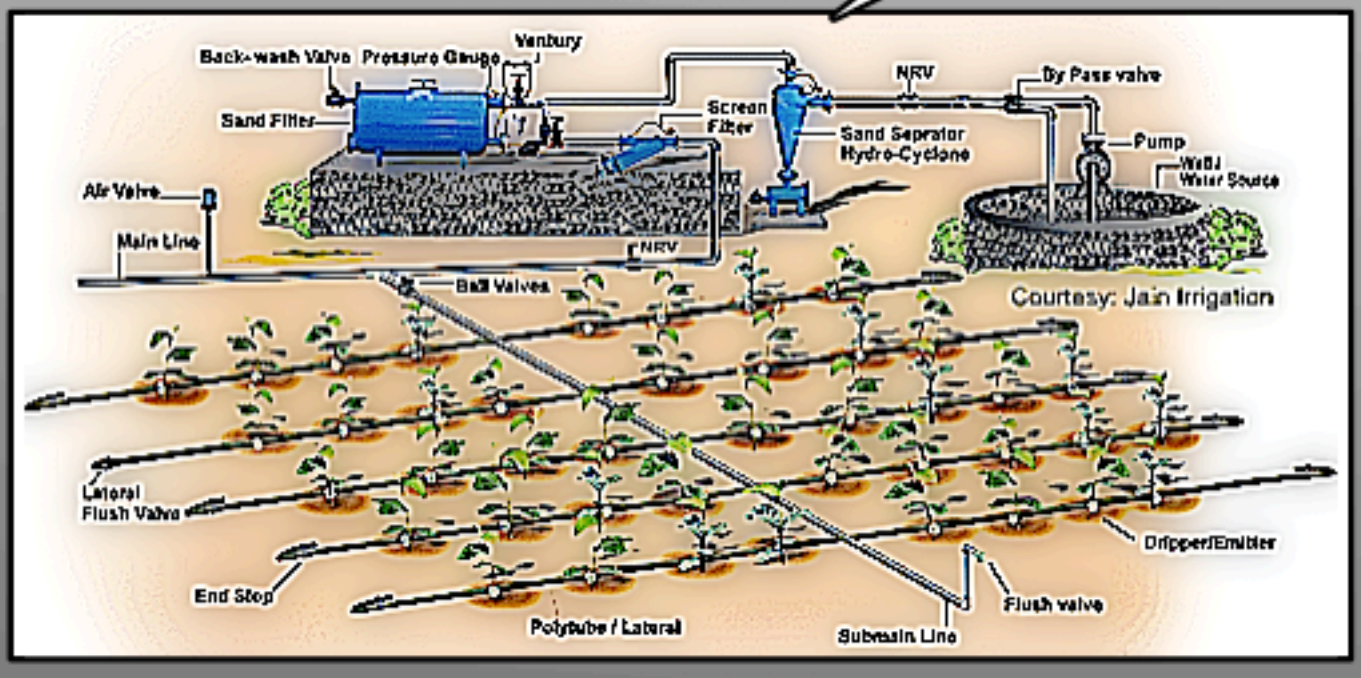

Wouldn't it be great if we could conserve all that water?
It would be! And we can actually do that. By using rainwater harvesting techniques and making catchment ponds, we could satisfy water needs of many villages and other urban areas.

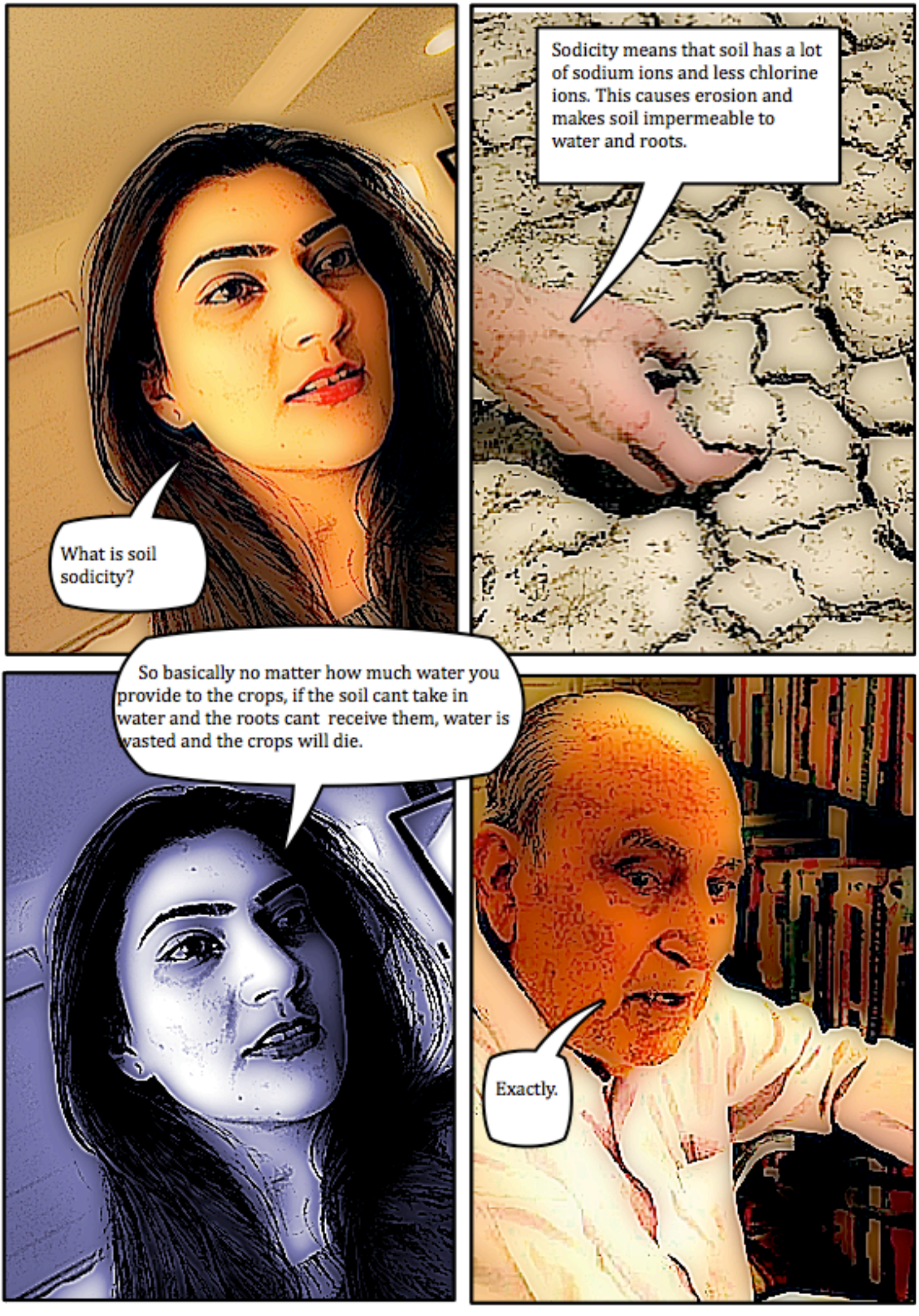
Yes... Well im glad we keep getting freshwater supply from rainfall.

But that's just one side of the coin. We still need to start using water more efficiently and be conscious of the fact that it's a resource that is limited... Its dying...

So what can we do?

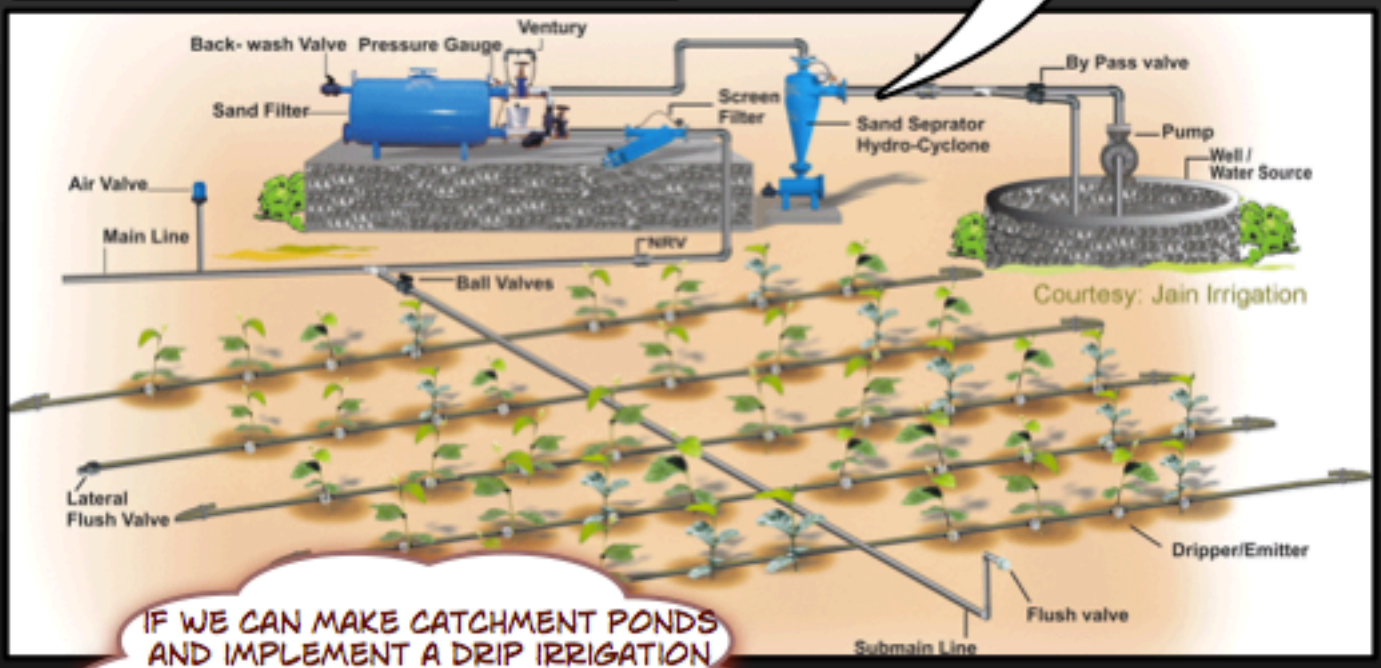
Since 90% of water is used for irrigation, by using a technique called drip irrigation, we can save a lot of water and even improve soil sodicity.




What is soil sodicity?
Sodicity means that soil has a lot of sodium ions and less chlorine ions. This causes erosion and makes soil impermeable to water and roots.
So basically no matter how much water you provide to the crops, if the soil cant take in water and the roots cant receive them, water is wasted and the crops will die.
Exactly.

And drip irrigation?

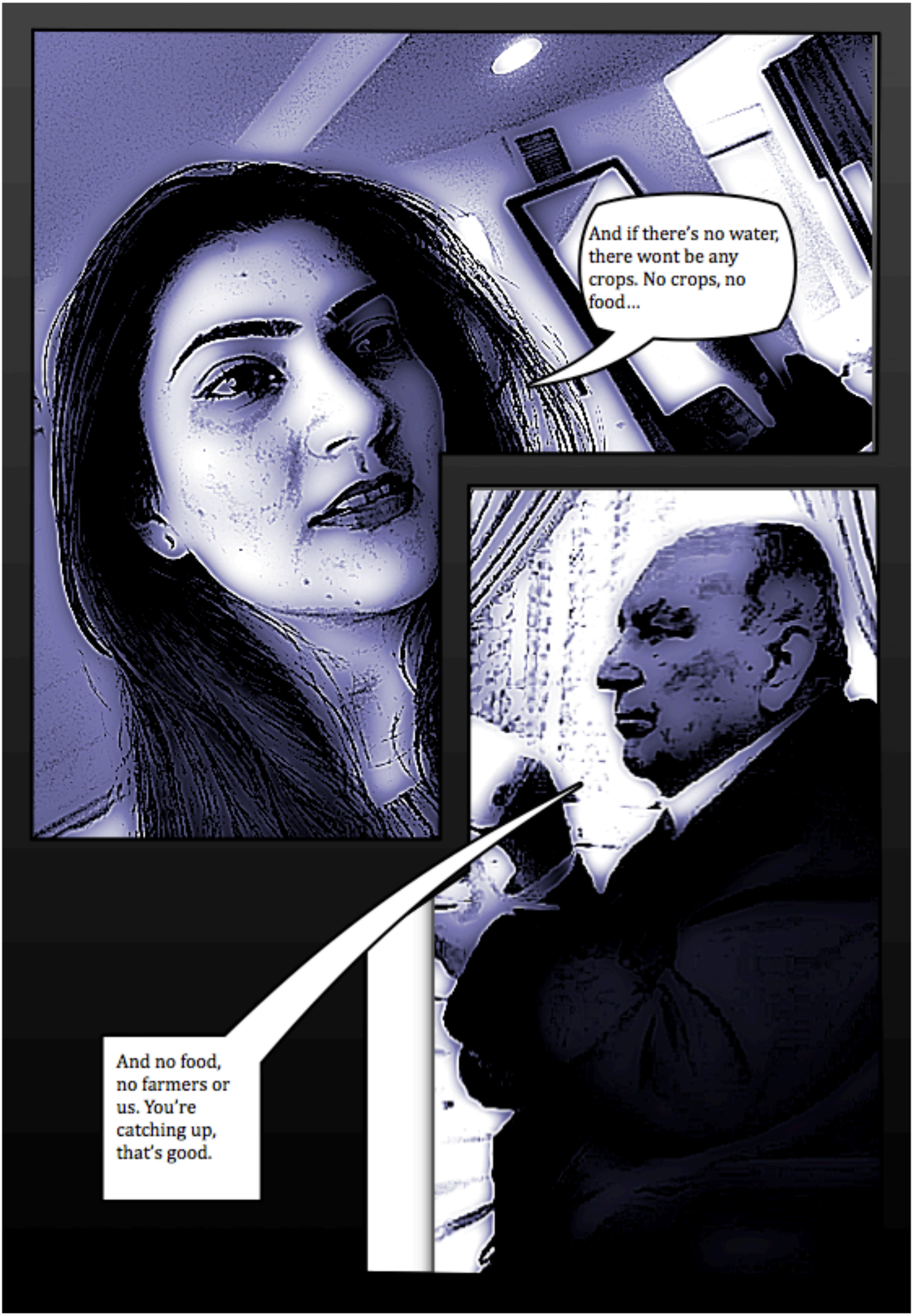
it's a method where plants are irrigated by a trickle of water through a system of tubes, vales and emitters. Basically the water does directly to the roots and you are able to keep the moisture level of the roots at the level that is enough for crop growth.

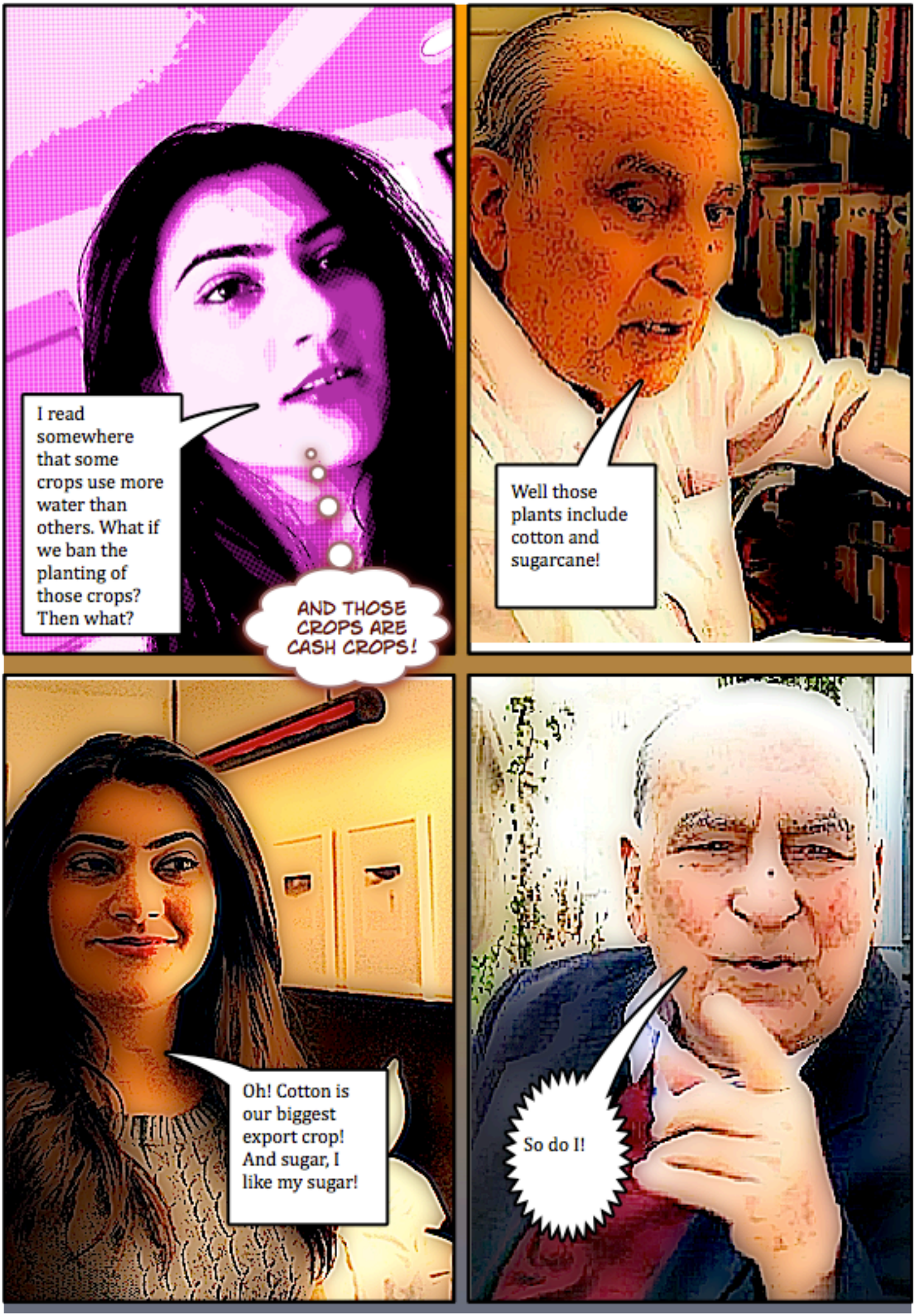


IF WE CAN MAKE CATCHMENT PONDS AND IMPLEMENT A DRIP IRRIGATION SYSTEM ON OUR LAND, WE CAN SAVE ENOUGH WATER TO START A DAIRY FARM NEXT YEAR OR EVEN EXPAND THE FARM LAND!

Interesting. But farmers here are illiterate and don't know about these techniques. They are probably costly too

It might be costly in the beginning but in the long run its more efficient and will save you money. Also, if we keep using water at the rate that we're using it, there wont be any water left...

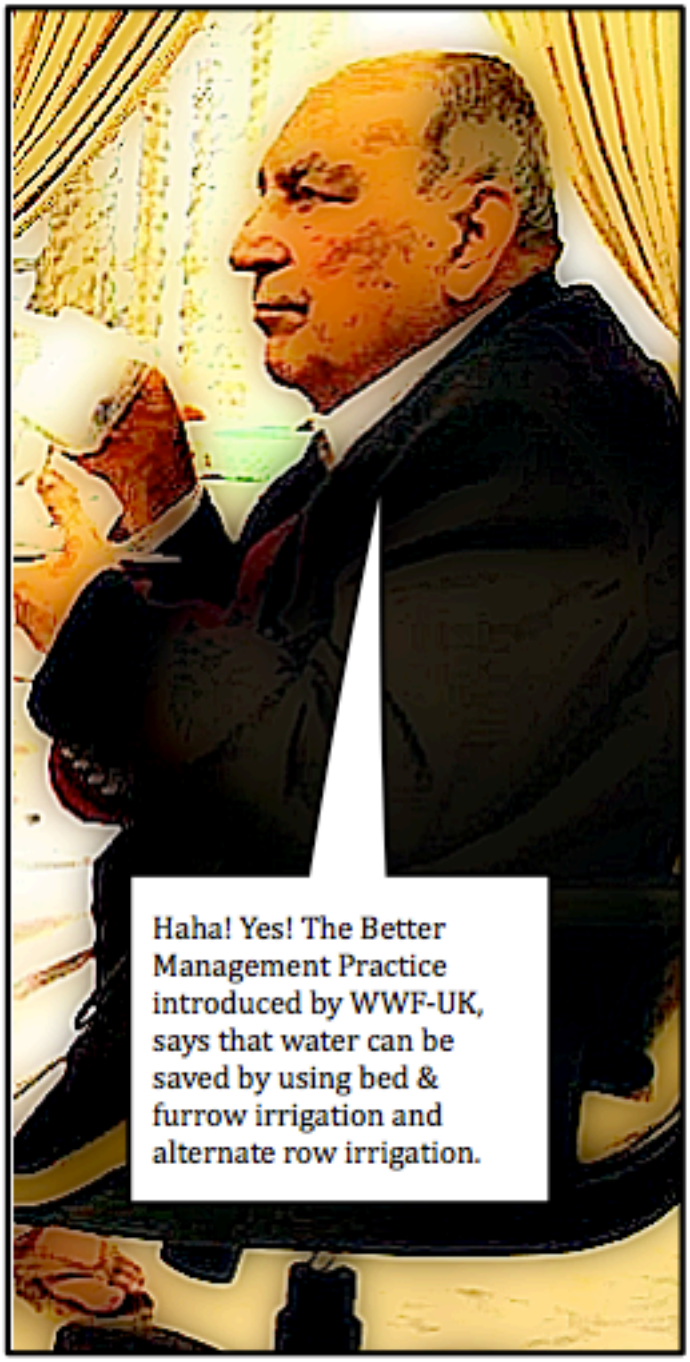

And if there's no water, there wont be any crops. No crops, no food...
And no food, no farmers or us. You're catching up, that's good.

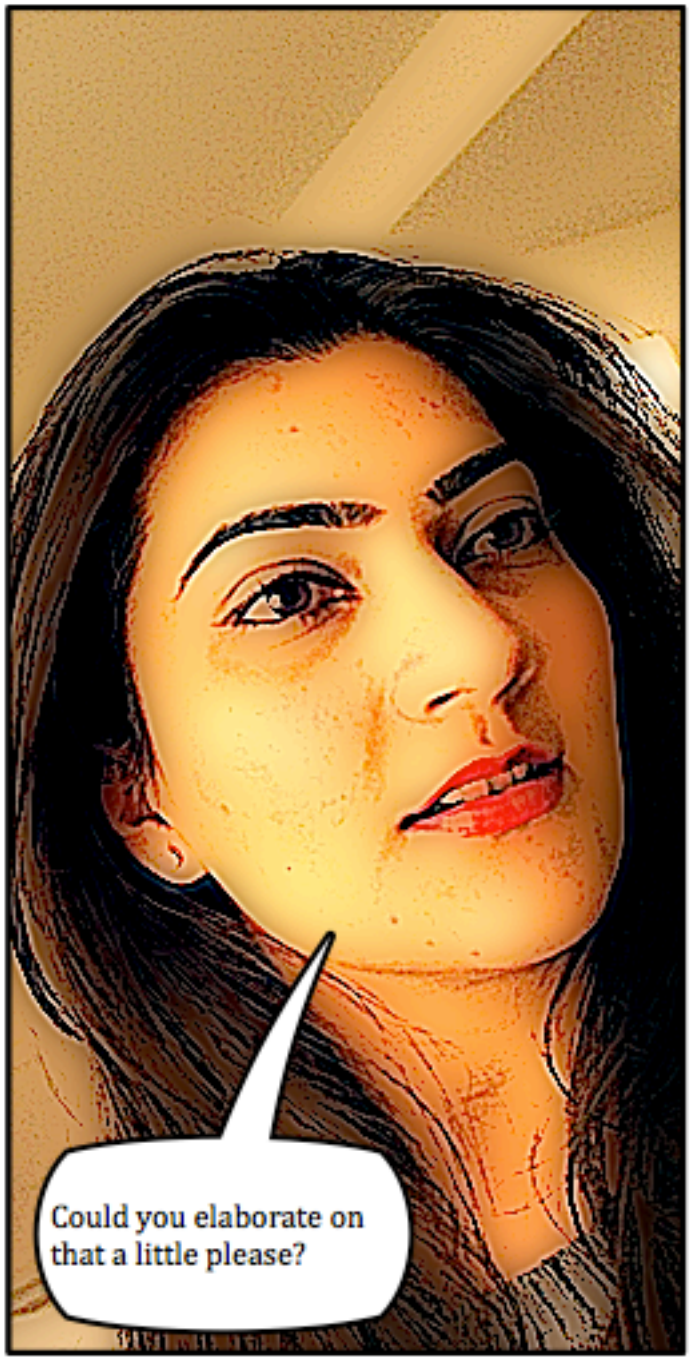

I read somewhere that some crops use more water than others. What if we ban the planting of those crops? Then what?
AND THOSE CROPS ARE CASH CROPS!
Well those plants include cotton and sugarcane!
Oh! Cotton is our biggest export crop! And sugar, I like my sugar!
So do I!


So then what? Do we just let it be?


Actually, there a solution to that problem too!

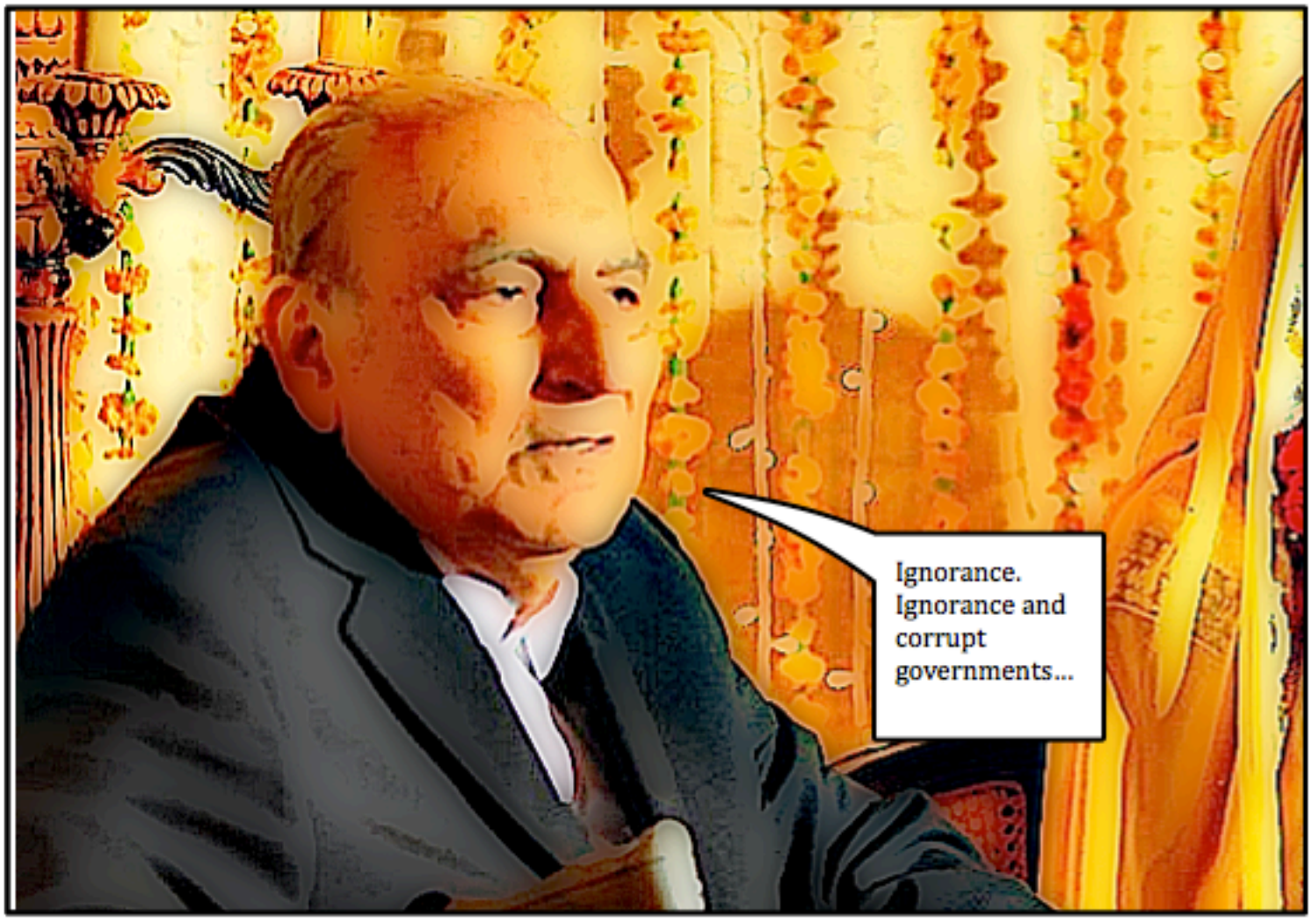

You're on a roll today arent you!

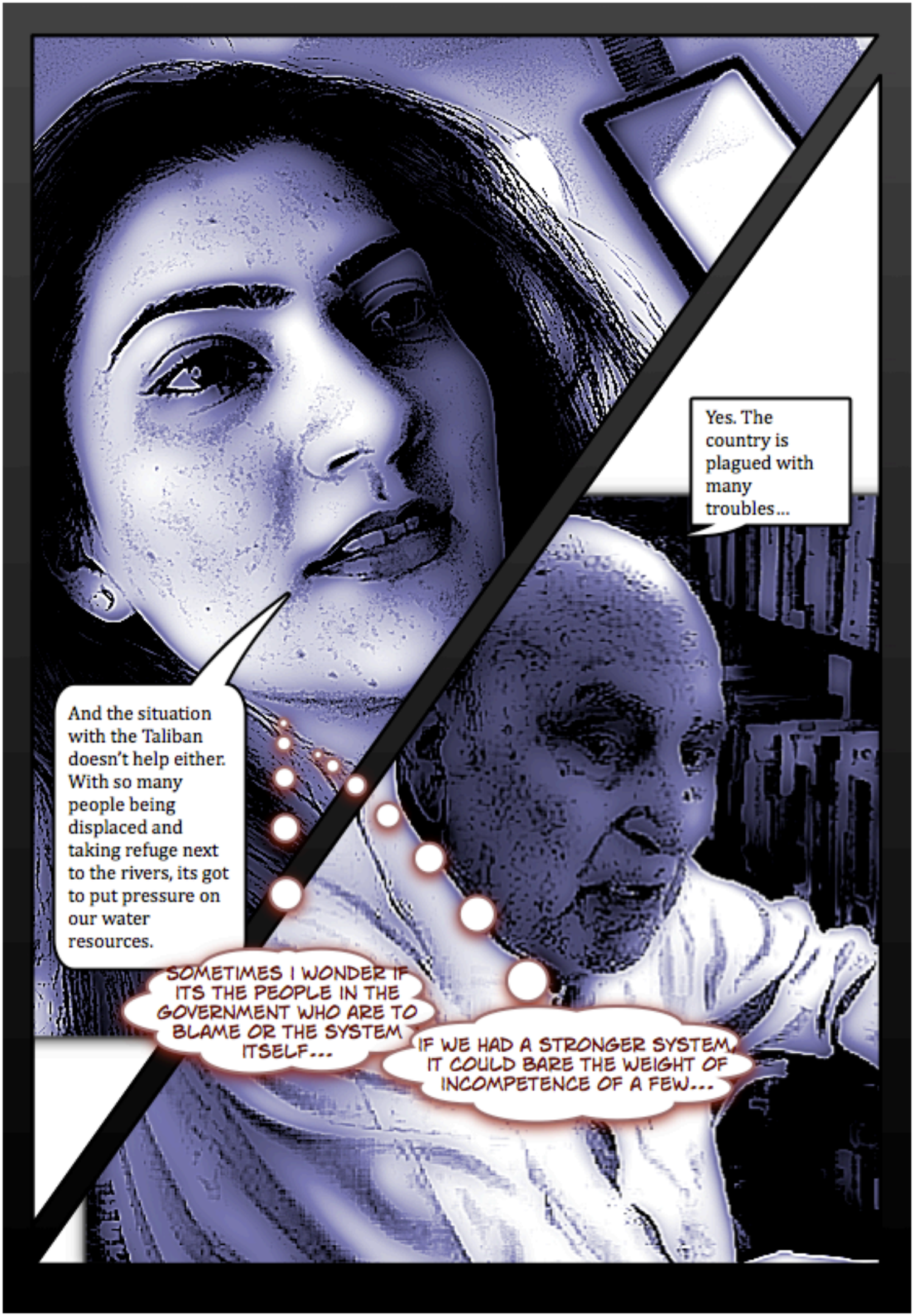

Haha! Yes! The Better Management Practice introduced by WWF-UK, says that water can be saved by using bed & furrow irrigation and alternate row irrigation.


Could you elaborate on that a little please?


It's a technique that allows you to grow crops on beds with less water.

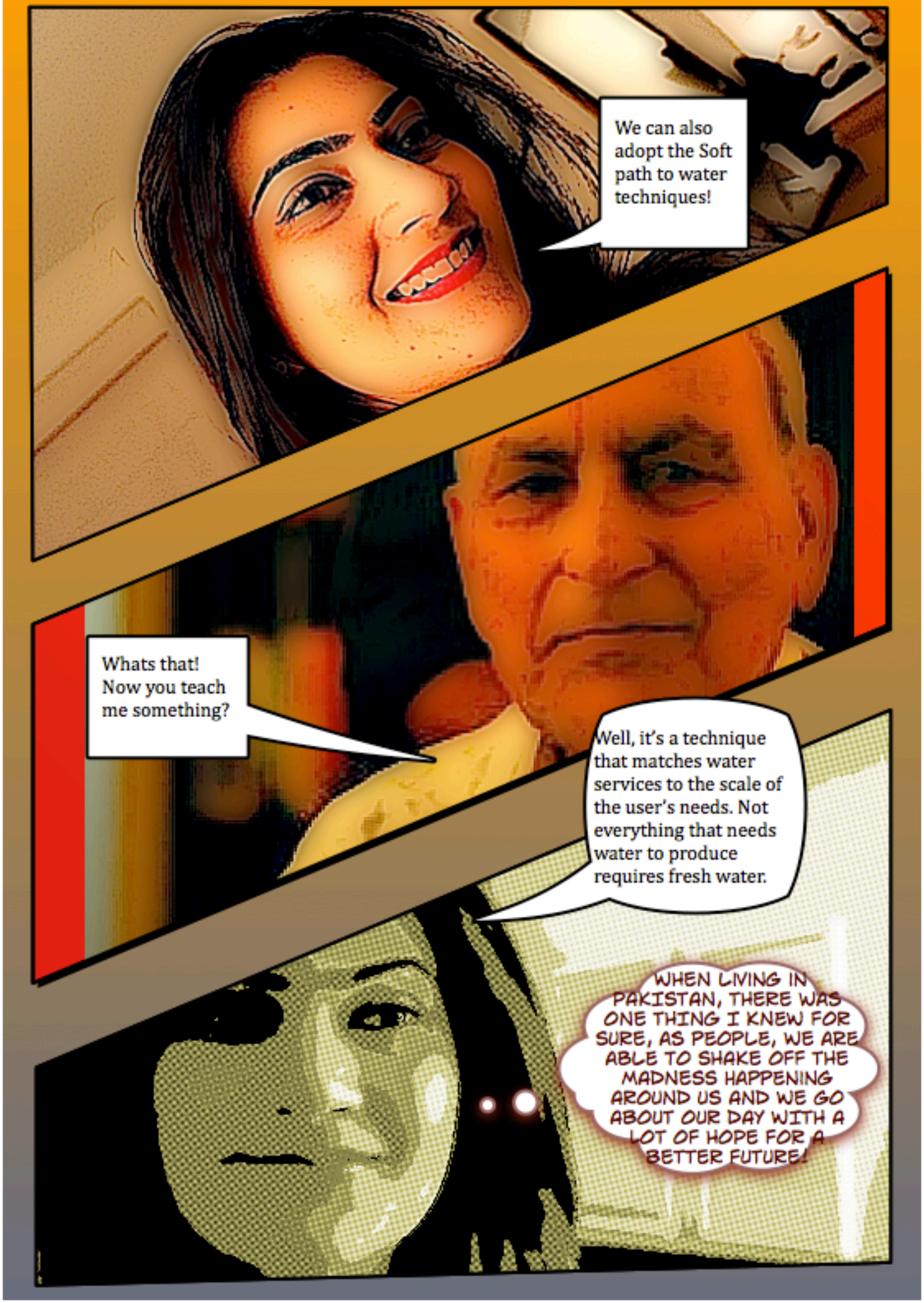

That actually sounds easy to do! Why don't people do that then?

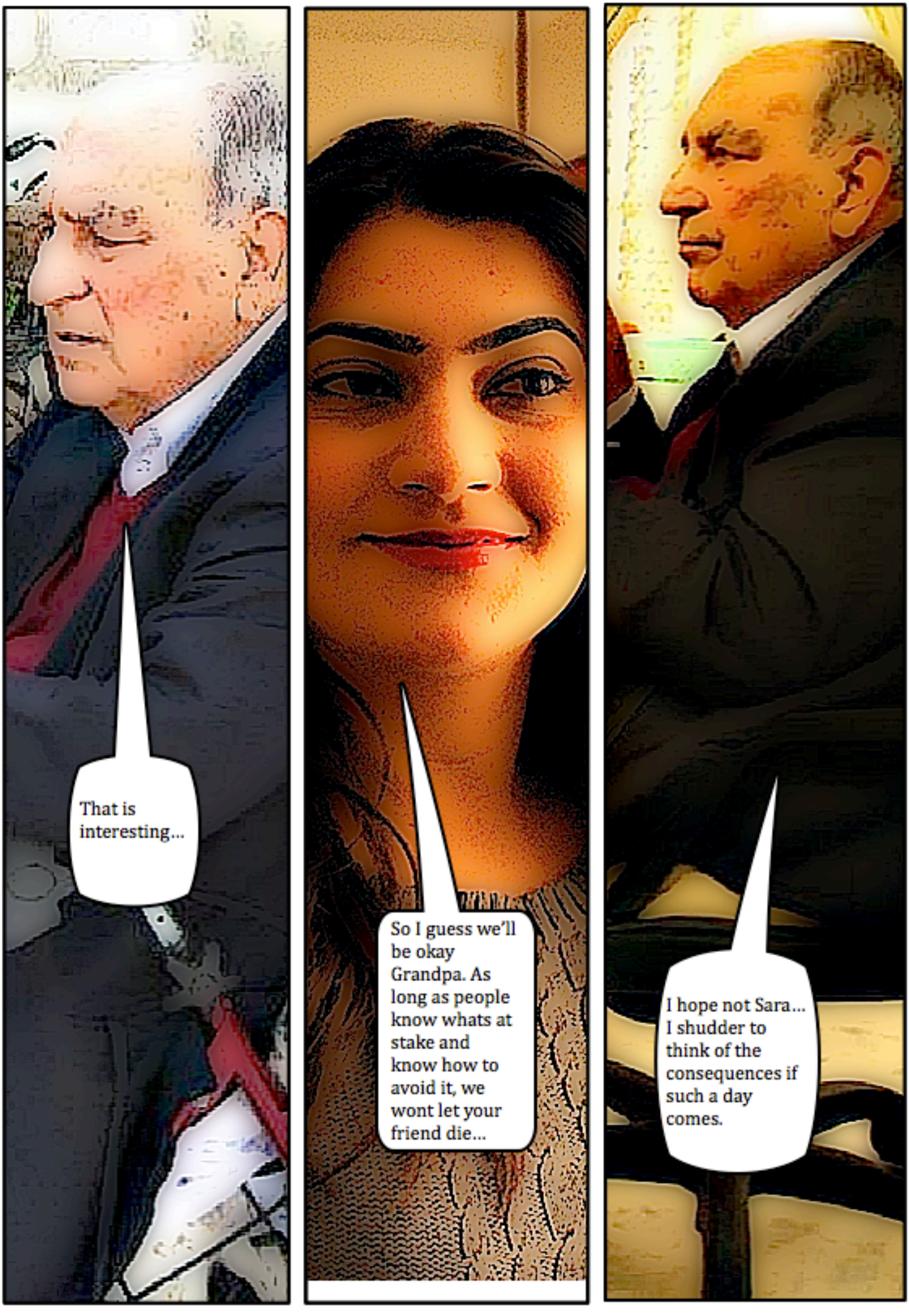

Ignorance. Ignorance and corrupt governments...


Yes. The country is plagued with many troubles...
And the situation with the Taliban doesn't help either. With so many people being displaced and taking refuge next to the rivers, its got to put pressure on our water resources.
SOMETIMES I WONDER IF ITS THE PEOPLE IN THE GOVERNMENT WHO ARE TO BLAME OR THE SYSTEM ITSELF...
IF WE HAD A STRONGER SYSTEM, IT COULD BARE THE WEIGHT OF INCOMPETENCE OF A FEW...


You mentioned earlier that 630 children die everyday due to water contamination?
Yes! Untreated sewage and industrial waste makes its way into the ground and the rivers. This is a serious health hazard and can cause chemical poisoning.
IN 2006, THE WORLD BANK ESTIMATED THAT ONLY 3 OUT OF 100 INDUSTRIES IN PAKISTAN USING HAZARDOUS CHEMICALS, TREATED THEIR WASTEWATER ADEQUATELY.
So what can we do to make sure we have water for generations to come?


Spreading awareness of limited water supply and its consequences should be number one
The government also needs to become more active and impose strict laws on how industries deal with its toxic water waste.
As far as houses are concerned, use fixtures that use less water, like taps and toilets. Being conscious of not letting water run when its not being used.
Rainwater harvesting and making catchment ponds can be very helpful in monsoon season especially to trap rainwater.Obviously, drip irrigation practices for agriculture land is very important.
BUT A CHANGE LIKE THAT WOULD REQUIRE A BIG OVERHAUL IN THE WAY POLICIES ARE MADE AND IMPLEMENTED...
IN THE U.S, EVERY DEPARTMENT, BE IT SAFETY, TRANSPORT OR EVEN ONES THAT ARE CONCERNED WITH SUSTAINABILITY, HAVE SYSTEMS IN PLACE THAT WORK..
...THEY WORK BECAUSE OF BETTER LONG-TERM PLANNING AND GOALS. BUT MOST IMPORTANTLY, THEY WORK BECAUSE OF ACCOUNTABILITY!


We can also adopt the Soft path to water techniques!
Whats that! Now you teach me something?
Well, it's a technique that matches water services to the scale of the user's needs. Not everything that needs water to produce requires fresh water.
WHEN LIVING IN PAKISTAN, THERE WAS ONE THING I KNEW FOR SURE, AS PEOPLE, WE ARE ABLE TO SHAKE OFF THE MADNESS HAPPENING AROUND US AND WE GO ABOUT OUR DAY WITH A LOT OF HOPE FOR A BETTER FUTURE!


That is interesting...
So I guess we'll be okay Grandpa. As long as people know whats at stake and know how to avoid it, we wont let your friend die...
I hope not Sara... I shudder to think of the consequences if such a day comes.


The End

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