

WORLD
in Stockholm,
August 31-September 5, 2014
WATER
WEEK

Presentation from the
2014 World Water Week in Stockholm

www.worldwaterweek.org



Coal-water conflicts: global overview Cases from China, India and South Africa

Iris Cheng, Greenpeace International

Water scarcity: a major de-stabilizer of society

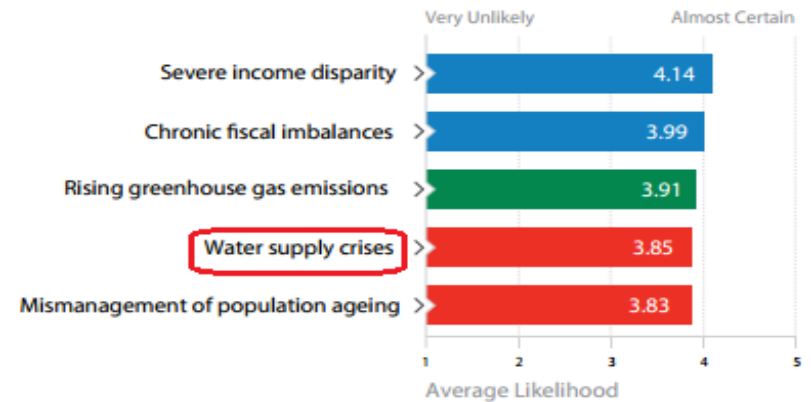
Water is top 5 global risks

- 63% of the population in China, India, Brazil, Russia, together are living under medium to severe water stress.
- 80% by 2030

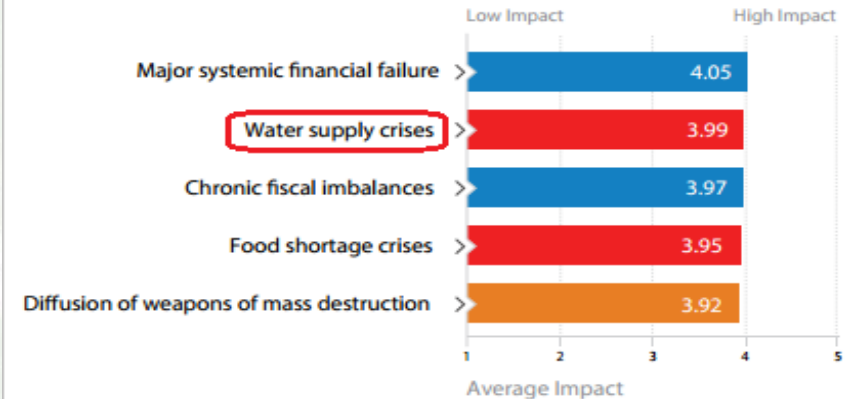
Source: World Economic Forum 2012
Global risk report

Figure 4: Top Five Risks by Likelihood and Impact

Likelihood



Impact



Coal is 50% of the energy-water problem

All energy:

66 → 135 billion cubic meters (bcm)
(2010-2035)

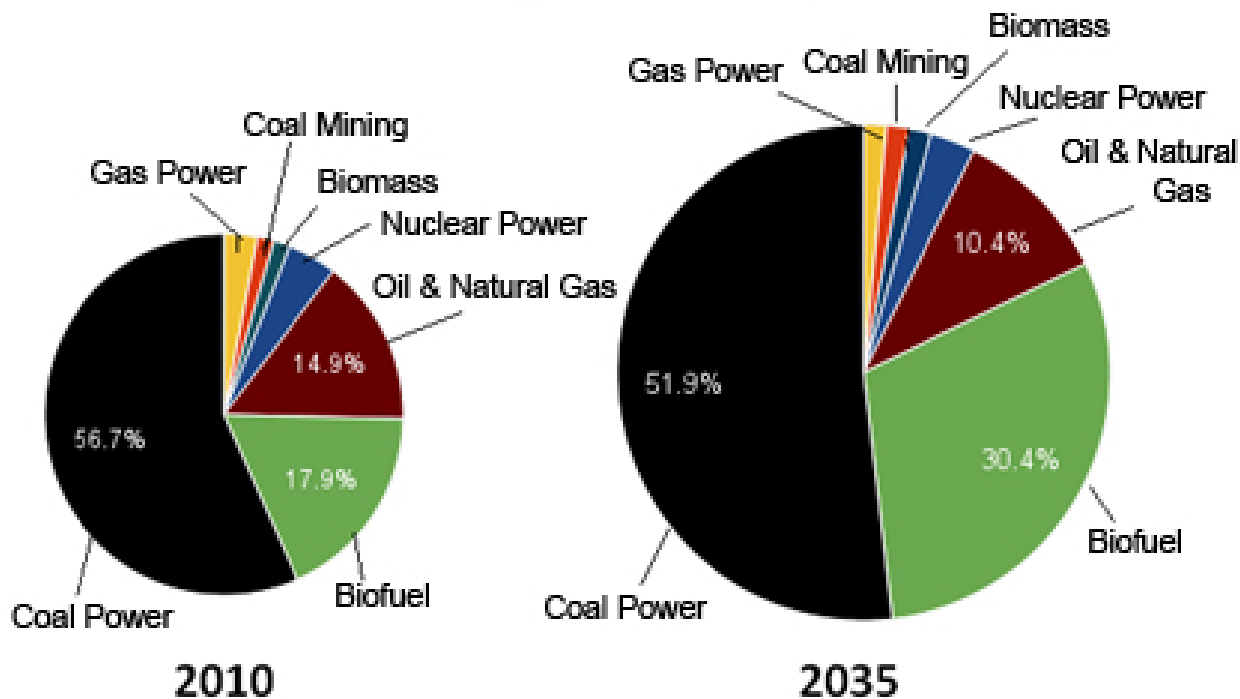
Coal:

37 → 70 bcm

Roughly responsible for half of the growth

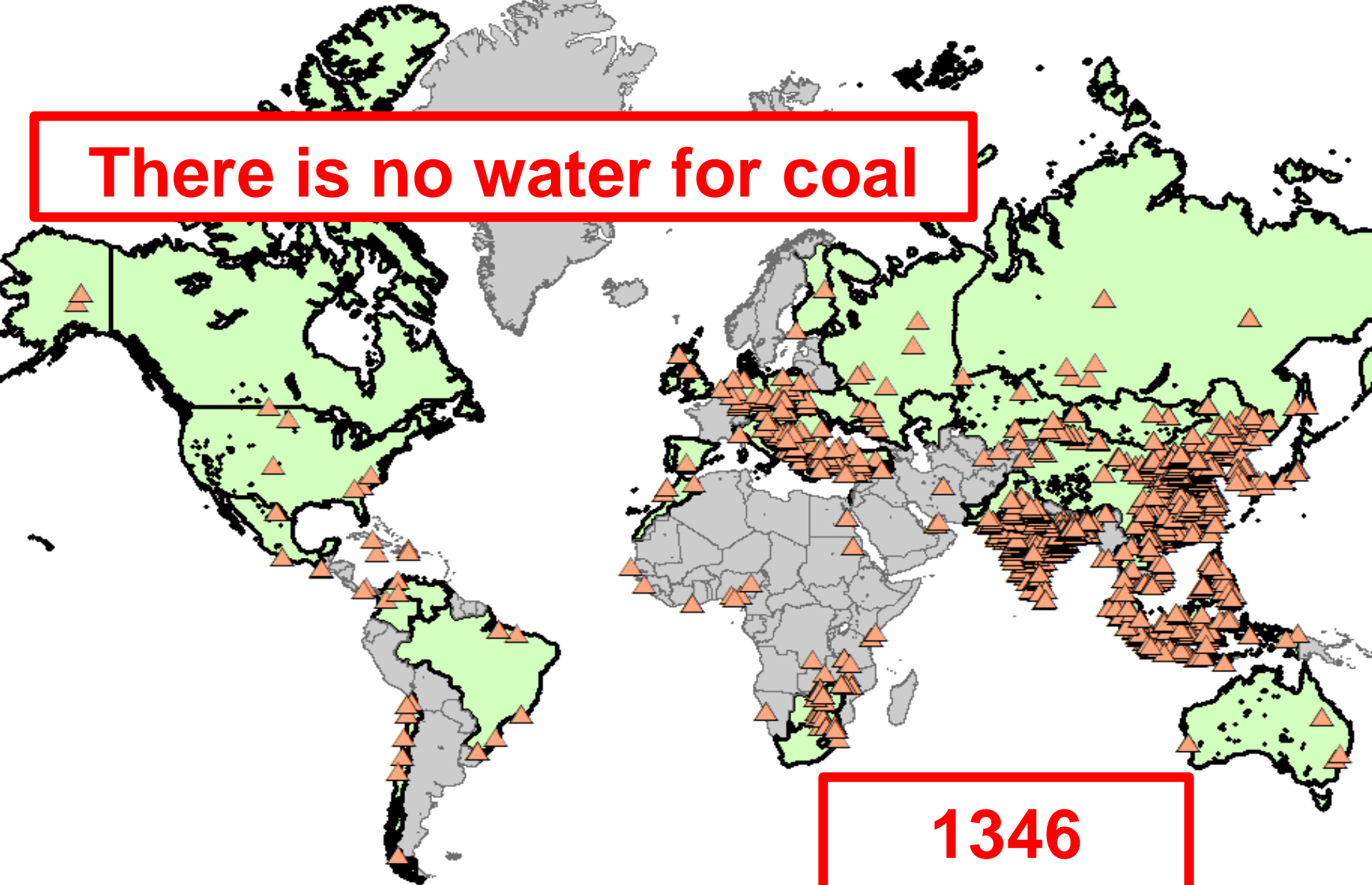
Source: IEA WEO 2012, current policy scenario

Growing Energy Thirst



Source: International Energy Agency, current policies scenario

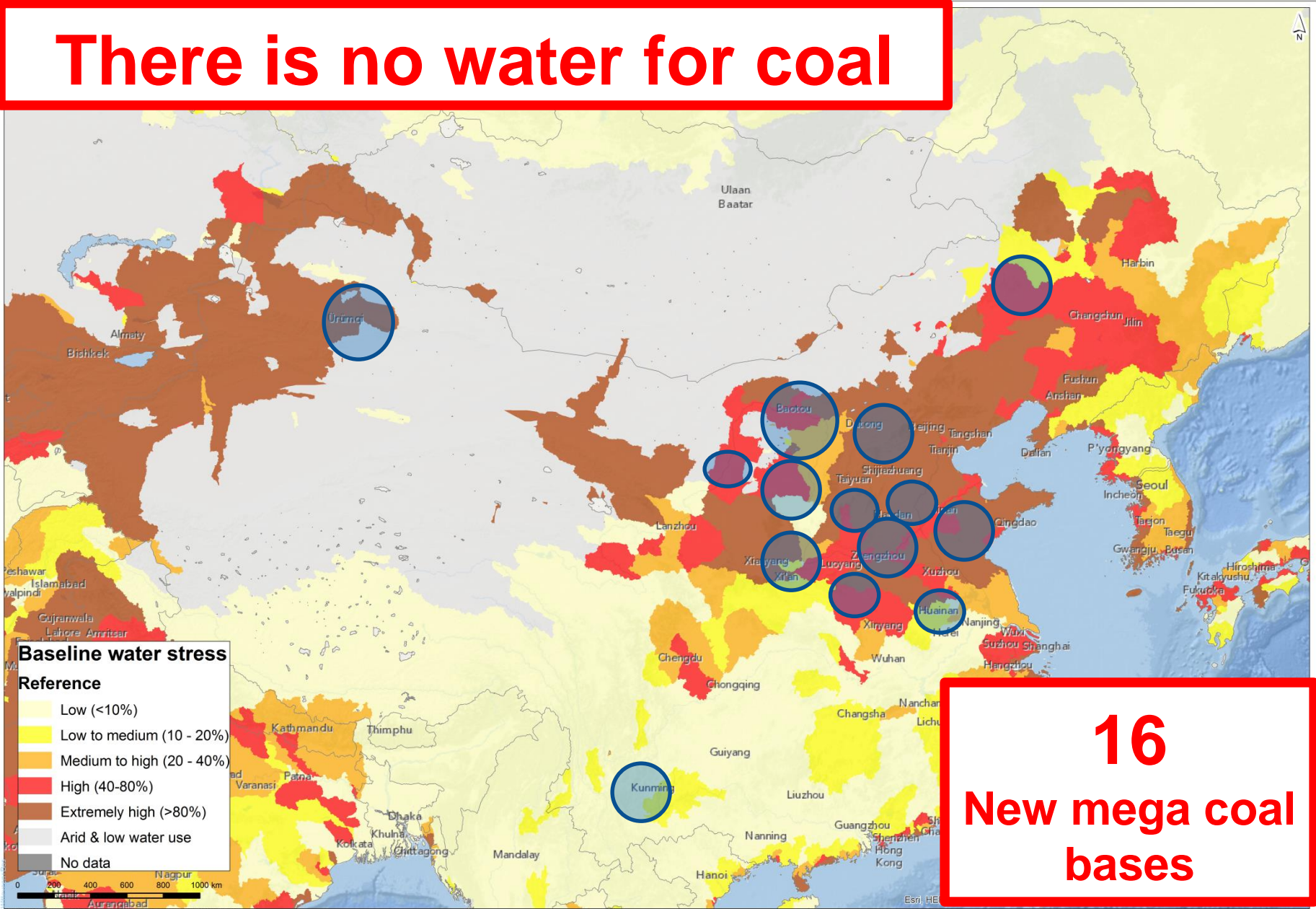
There is no water for coal



1346
proposed
plants

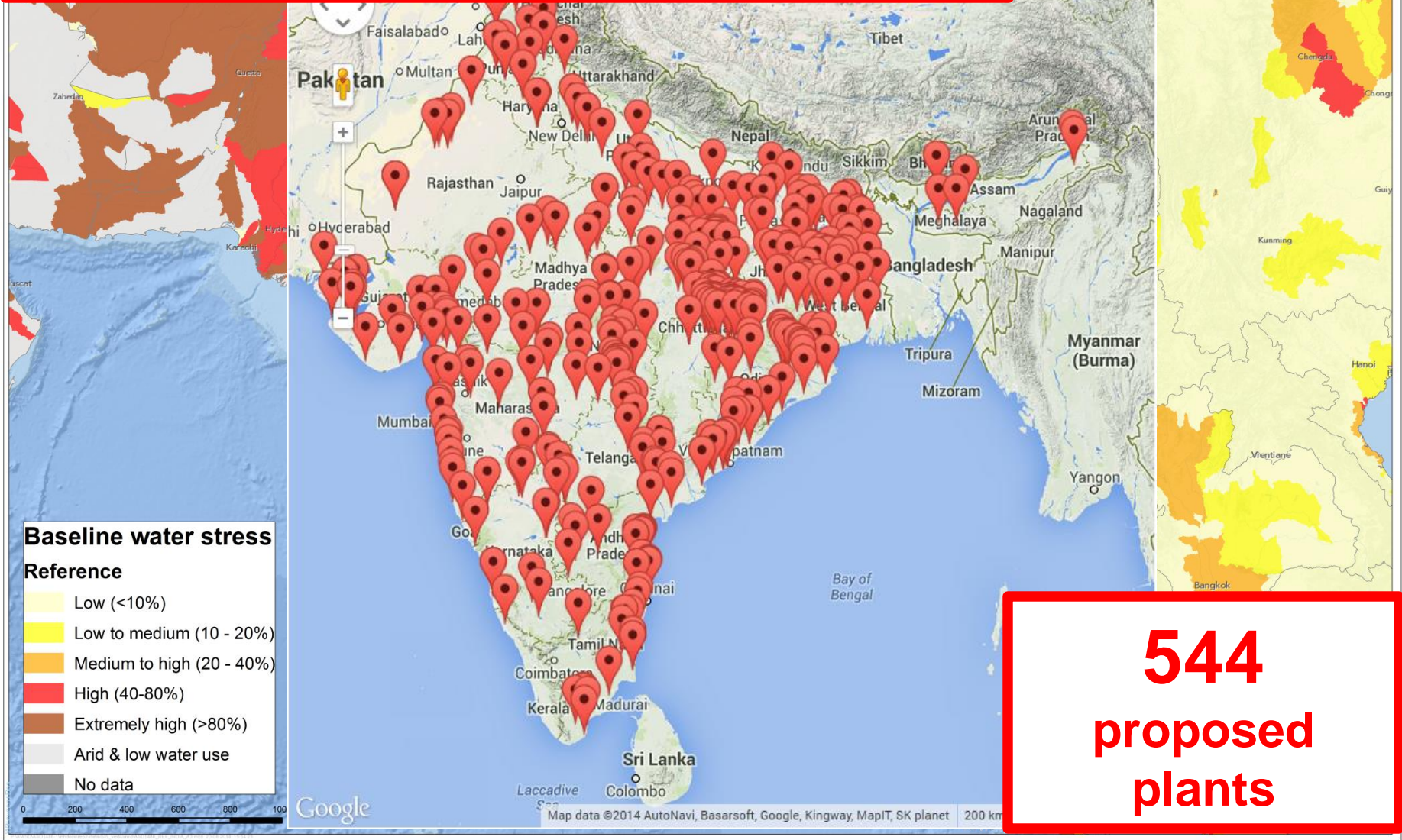
Planned coal plants until 2025

There is no water for coal



16
New mega coal
bases

There is no water for coal





**Coal water conflicts are
happening NOW**

China: Mismatch between Coal & Water Resources

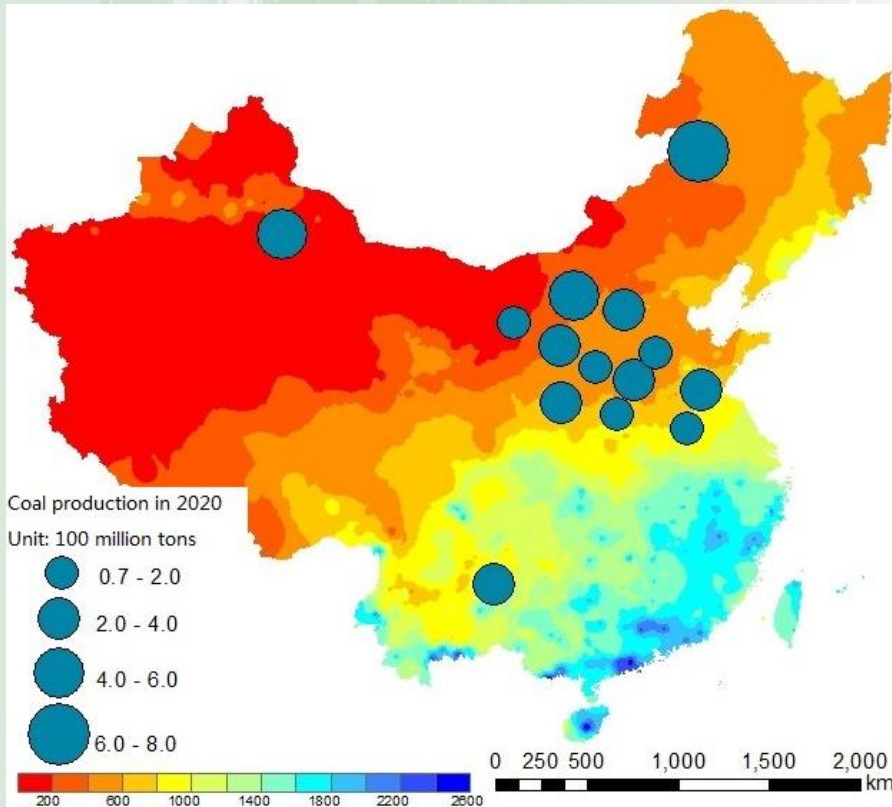


Figure 1. Major coal mining bases under the 12th Five-Year Plan (color indicates annual precipitation, mm/a)

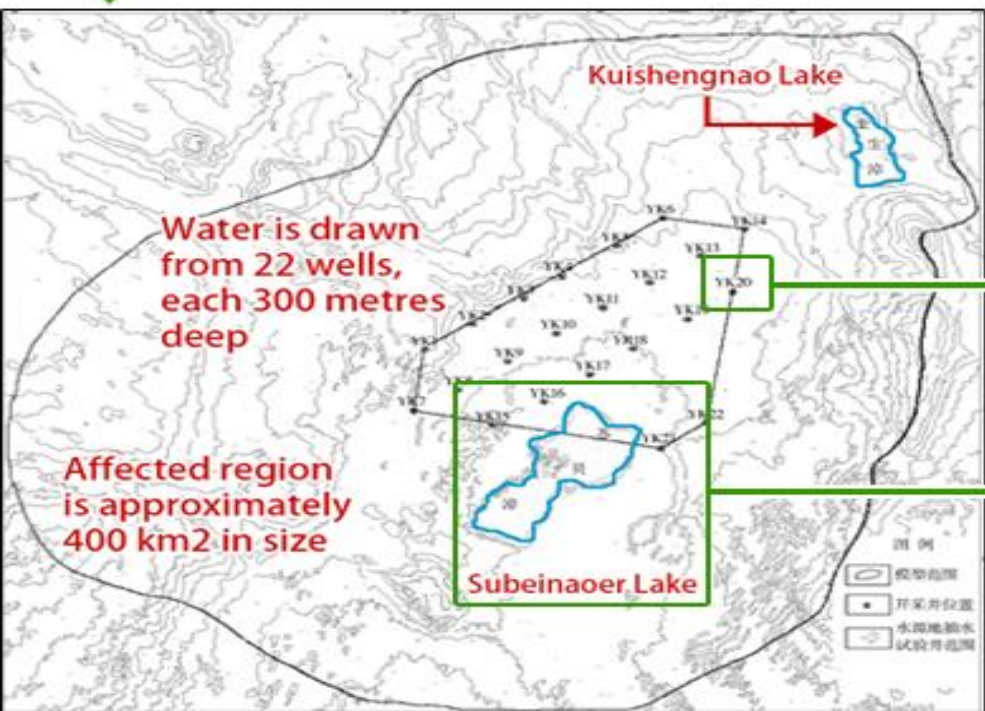
By 2015, 16 new coal power bases will consume 10 billion m³ of water annually equivalent to **1/6 of the annual total water volume of the Yellow River**

53% of **ensured** coal reserves are in water scarce or water deficit regions.

McKinsey estimates that China will have an **unmet water demand of over 200 bln m³** (25% of total supply) by 2030.



**Conflict 1: Coal 'water grab'
Inner Mongolia, China**



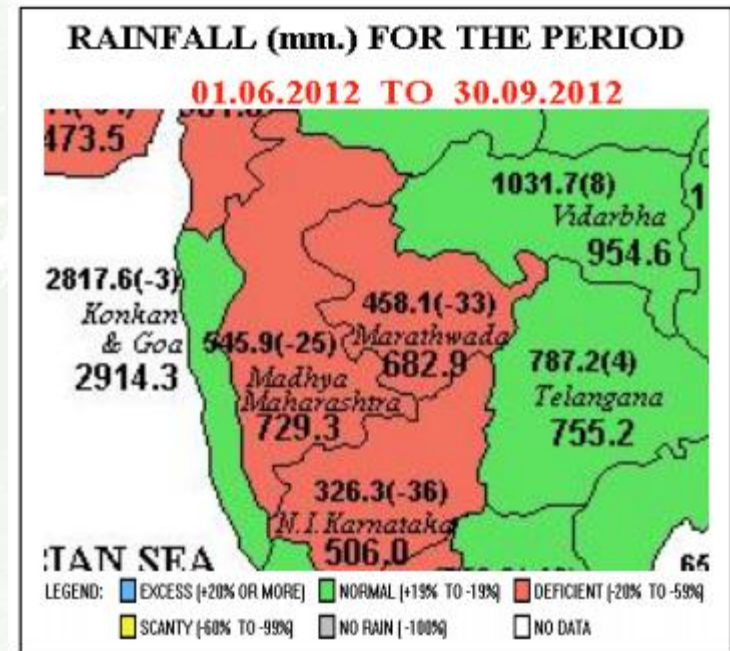
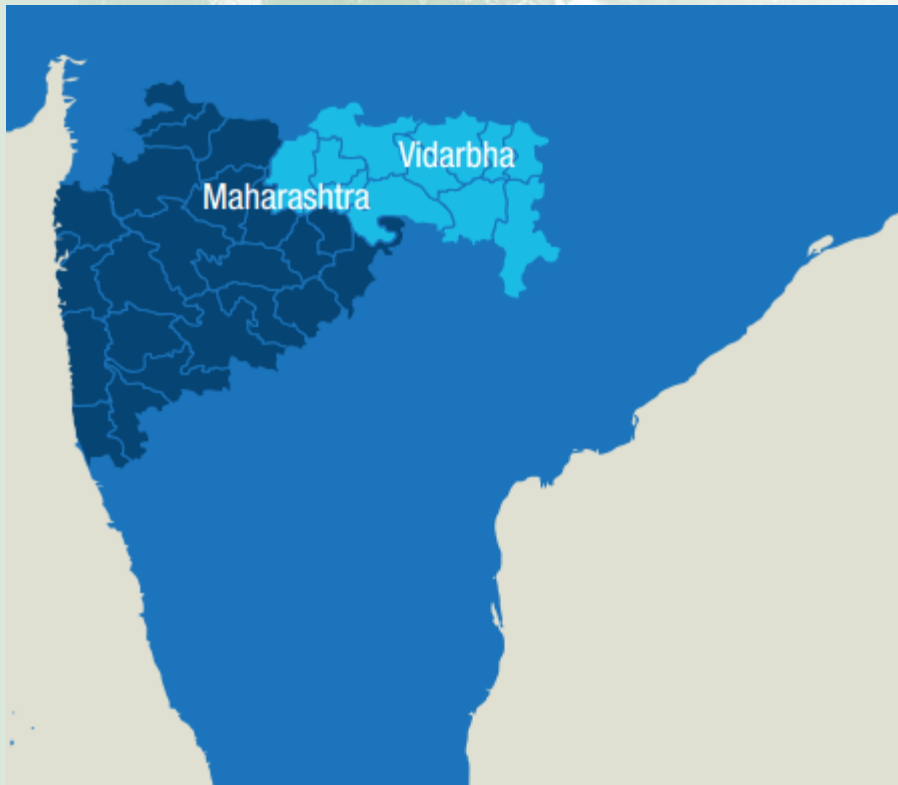
- 100km pipeline to extract groundwater from desert
- 50 million tonnes of groundwater extracted in arid region
- Local lake shrunk by 62% in 8 years

Social instability



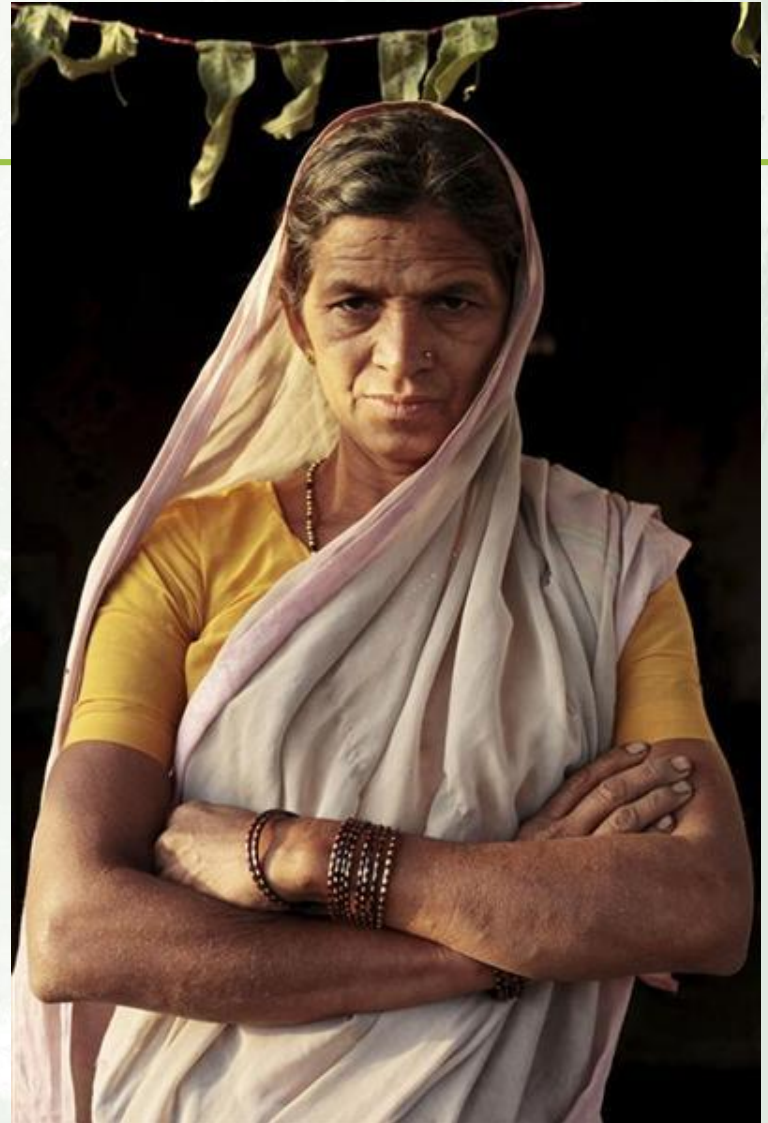
- All 2600 local wells dried up
- New wells need to be 100m deep
- 5000 people lost livelihood – protests, petitions
- 2014: Shenhua announced they will stop extraction

Conflict 2: coal vs farmers Vidarbha, Maharashtra, India



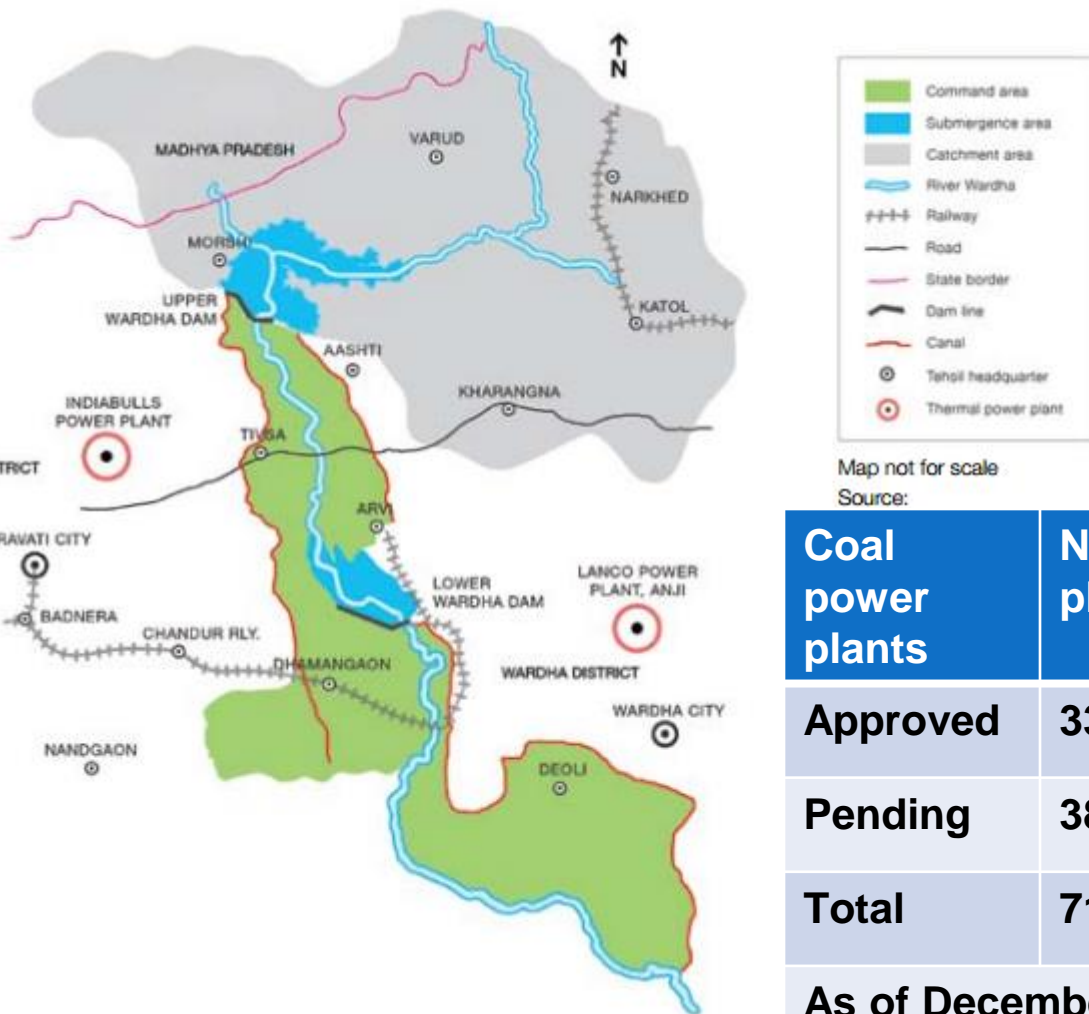
Current: 4 state owned coal plants generate ~ 4500 MW.

6,084 farmers
committed suicide
in Vidarbha in
2001-2010
due to lack of water
for irrigation, debt



Kalavati Banduka, whose husband committed suicide in 2005

Coal cluster: 71 new coal plants proposed



New demand from coal plants will take away **40%** of water from Wardha river

Coal power plants	No. of plants	Generation capacity MW	Water allocation (million cubic meters)
Approved	33	24655.5	1008
Pending	38	30041.5	1040
Total	71	54697	2049

As of December 2010

Illegal diversion of water to coal plants

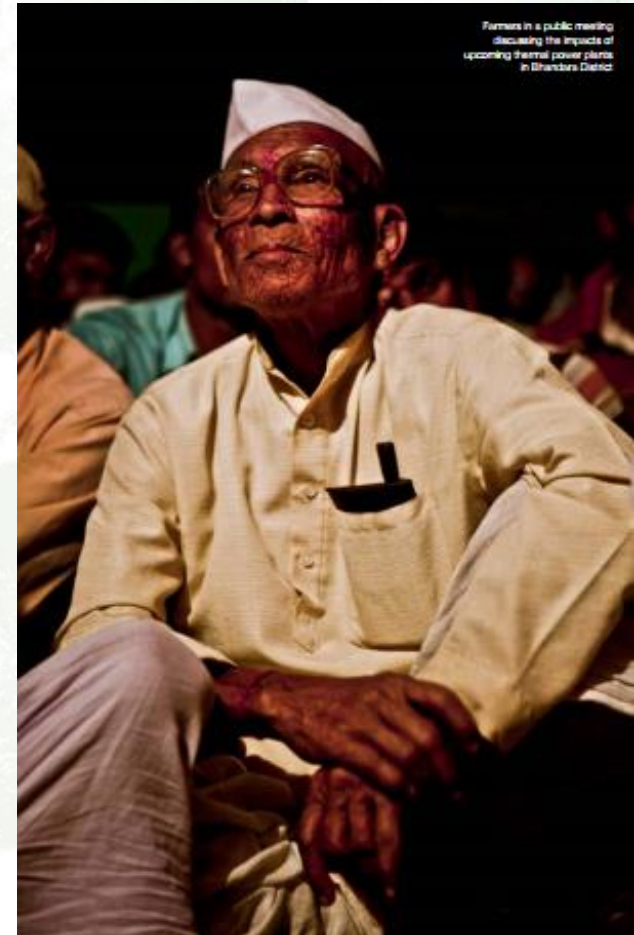


Between 2008 and 2009, the Maharashtra government diverted **124 million cubic metres** of water from the dam to thermal power plants.

Depriving nearly 33,000 hectares of irrigation, or **41% of the total command area**.

Social instability: protests, lawsuits

2013: worst drought in 40 years
Farmers staged a 100-day protest



Conflict 3: water or health? South Africa



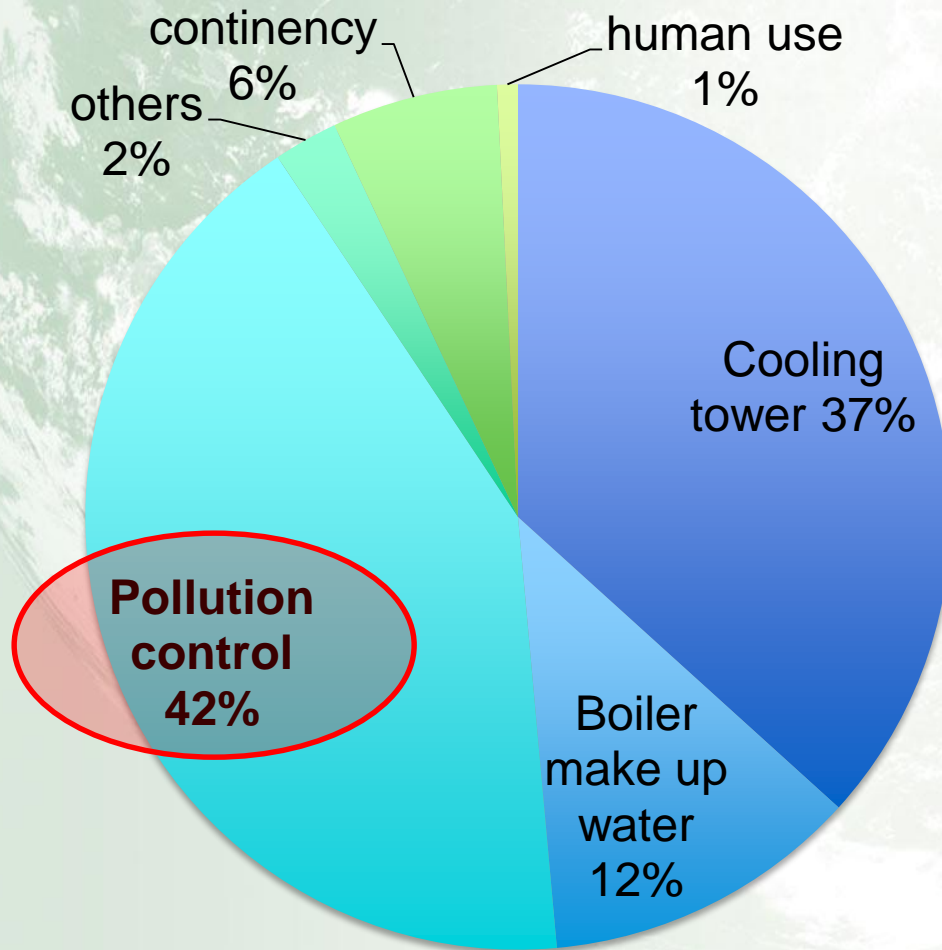


**Widespread water pollution from mines
drives water scarcity**



1 million households don't have access to 25 litres of water / day.

In South Africa, new coal plants use air cooling But cooling is only part of the water use



**Study of air cooled plant in
China 2x1000MW**

Source:
NORTHWEST ELECTRIC
POWER DESIGN INSTITUTE,
CHINA

西北电力设计院 (2011)
华能段寨电厂

Water for coal at huge costs to public health

- **New Minimum Emissions Standards will kick in 2015**, mandating all industrial facilities to install **pollution controls**. (scrubbers)
- **Eskom: “No unallocated water available” There is not enough water to operate the scrubber** and applied for an exemption.
- If Eskom succeed in getting an exemption from Minimum Emissions Standards, it will lead to approximately **20000 pre-mature deaths**.
- **Government decision expected in September.**

**SOUTH AFRICA'S COAL PLANTS
HAVE A NEW FILTER...**



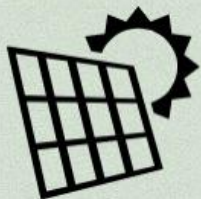
**HIS NAME IS
NTOKOZO**



GREENPEACE



WHAT DO YOU NEED TO DO?



WATER USE BY POWER PLANTS



WIND

SOLAR

NATURAL GAS

NUCLEAR

COAL



0
Litres

100
Litres

750
Litres

2550
Litres

2600
Litres



When it comes to energy, we have choices

This is how much water is required to provide an average European with power for 1 year (to produce 1 Megawatt-hour of electricity)

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ENERGY-WATER CONFLICTS ARE AVOIDABLE



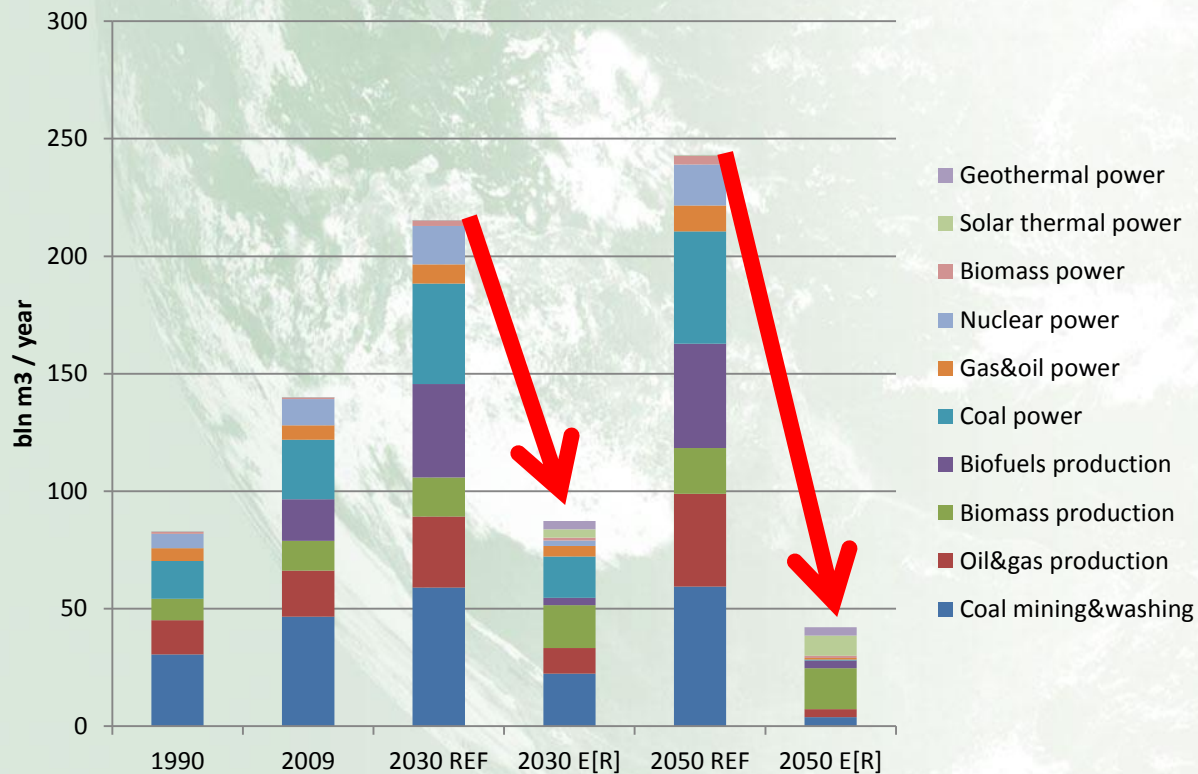
WE HAVE

A CHOICE

Curbing coal is the most actionable, impactful solution

Choose clean energy makes a huge difference for water

Global water consumption for energy



Win for water
Win for climate
Win for business

Projected global water consumption for thermal power generation and fuel production in the IEA Current Policies scenario (REF) and Energy [R]evolution (E[R]) scenarios. Estimated water consumption in 1990 and 2009 is presented for comparison.

GREENPEACE

A photograph of a woman and two children playing in a river. The woman is in the center, smiling broadly with her mouth open, splashing water. Two children are on either side of her, also in the water. The background shows a riverbank with some vegetation and a small boat in the distance. The overall scene is bright and joyful, emphasizing the importance of clean water.

water
is for life

#NoWater4Coal

Iris.Cheng@greenpeace.org



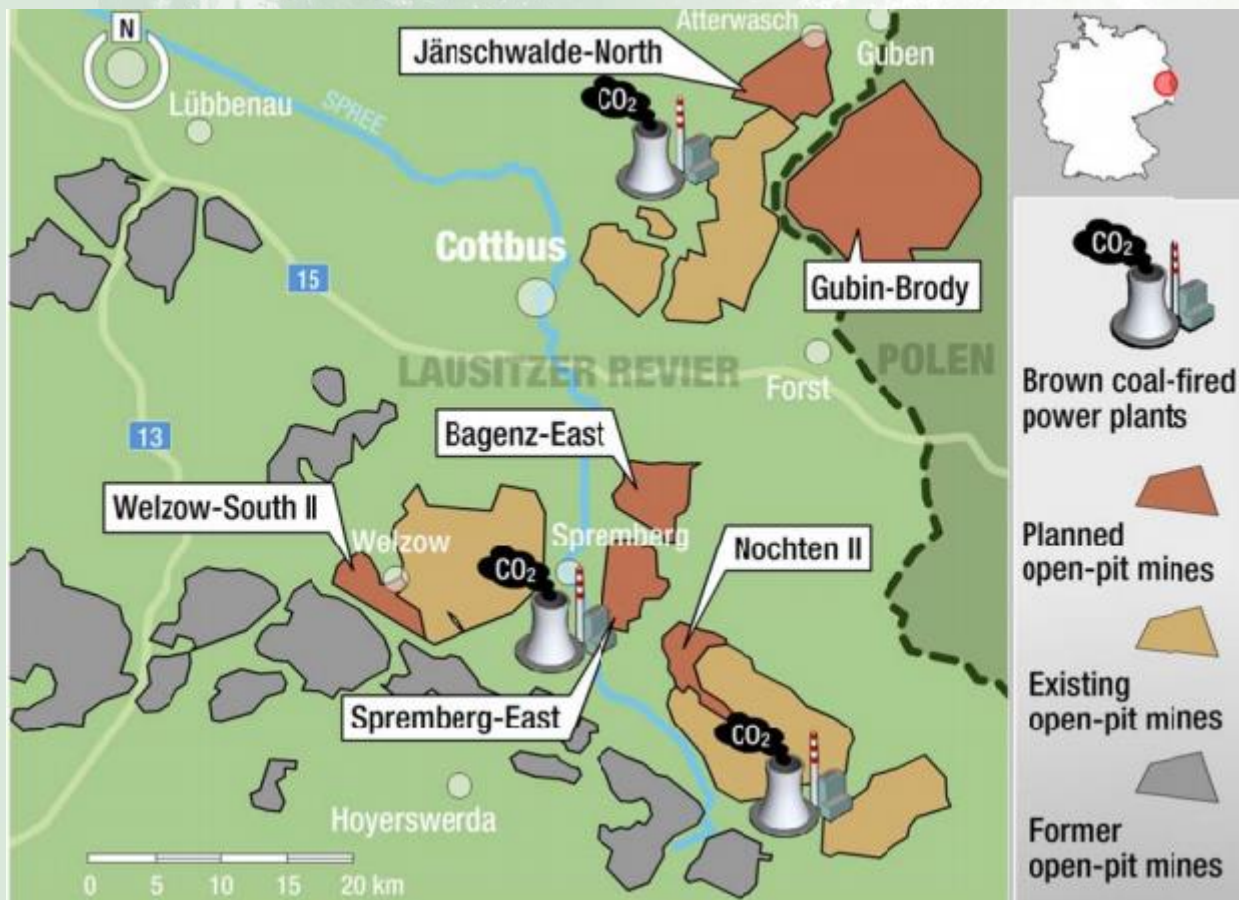
**Europe: Pollution from lignite mining
Vattenfall vs Spree**

Vattenfall vs Spree



Greenpeace documents the 'Brown Spree' – Iron-rich mud and high acid levels are caused by brown coal mining

Germany: Public consultation Sep 2013



**120,000
submissions
against mine
expansion**

80% German public don't want lignite mine to expand

Sweden: public outrage

- Vattenfall's CO2 emission is already twice of Sweden.
- 47,000 people signed the Greenpeace petition since April.



77% of public in Sweden want the government to stop Vattenfall's new mine