



October 1, 2019

From a trickle to a flood:

How emergent innovative approaches can scale water stewardship

Alexis Morgan, Global Water Stewardship Lead, WWF



1972



2019



Between 1970 and 2016, freshwater species declined by **83%**, more than any other group ...**but** WWF can now track movements of such elephants and water holes in near-real time with our **own satellite (PandaSat)**.



5 billion people will live in
water stressed regions by 2050
...but many of them will be
enabled with 5G+ technology
and will be **innovating solutions**

The background of the slide is a photograph of a vast, arid landscape. The foreground is dominated by dark, parched soil that has cracked into a complex, irregular pattern of deep fissures. In the distance, a flat, dry field stretches towards a line of green trees and low hills under a clear, light blue sky.

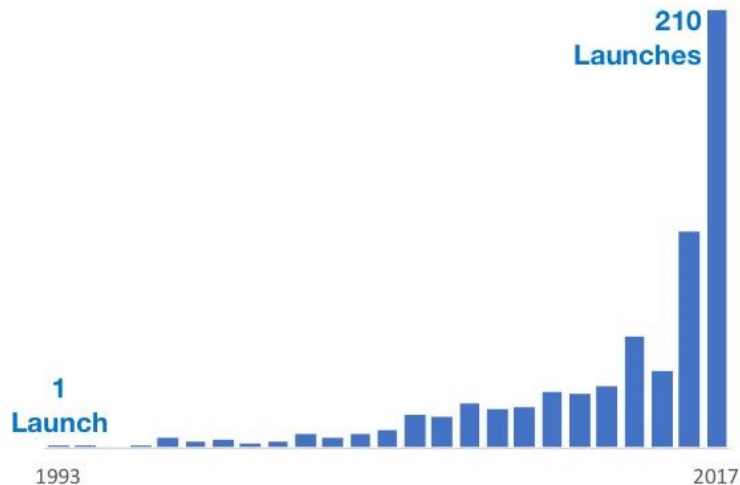
Global demand for freshwater will exceed supply by **40% in 2030.**

...**but** soon we will be able to tell in real time, what that looks like for nearly every square meter of the planet



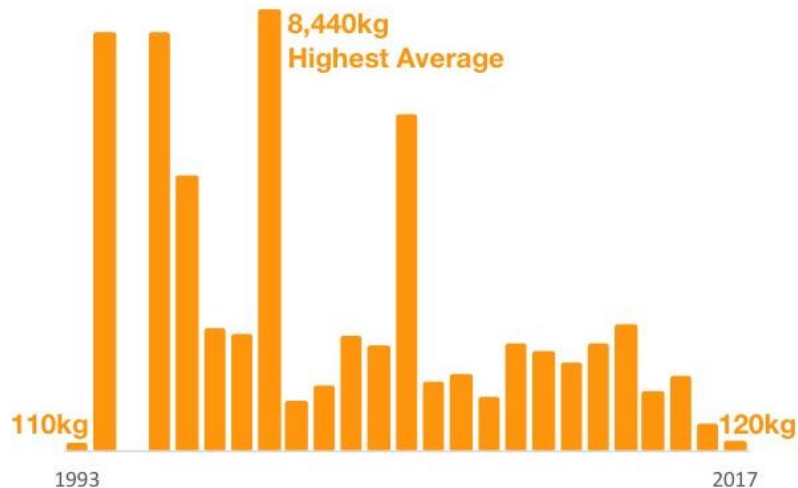
Satellites Launched

(Number of launches per year)



Lighter Weight and Smaller Satellites

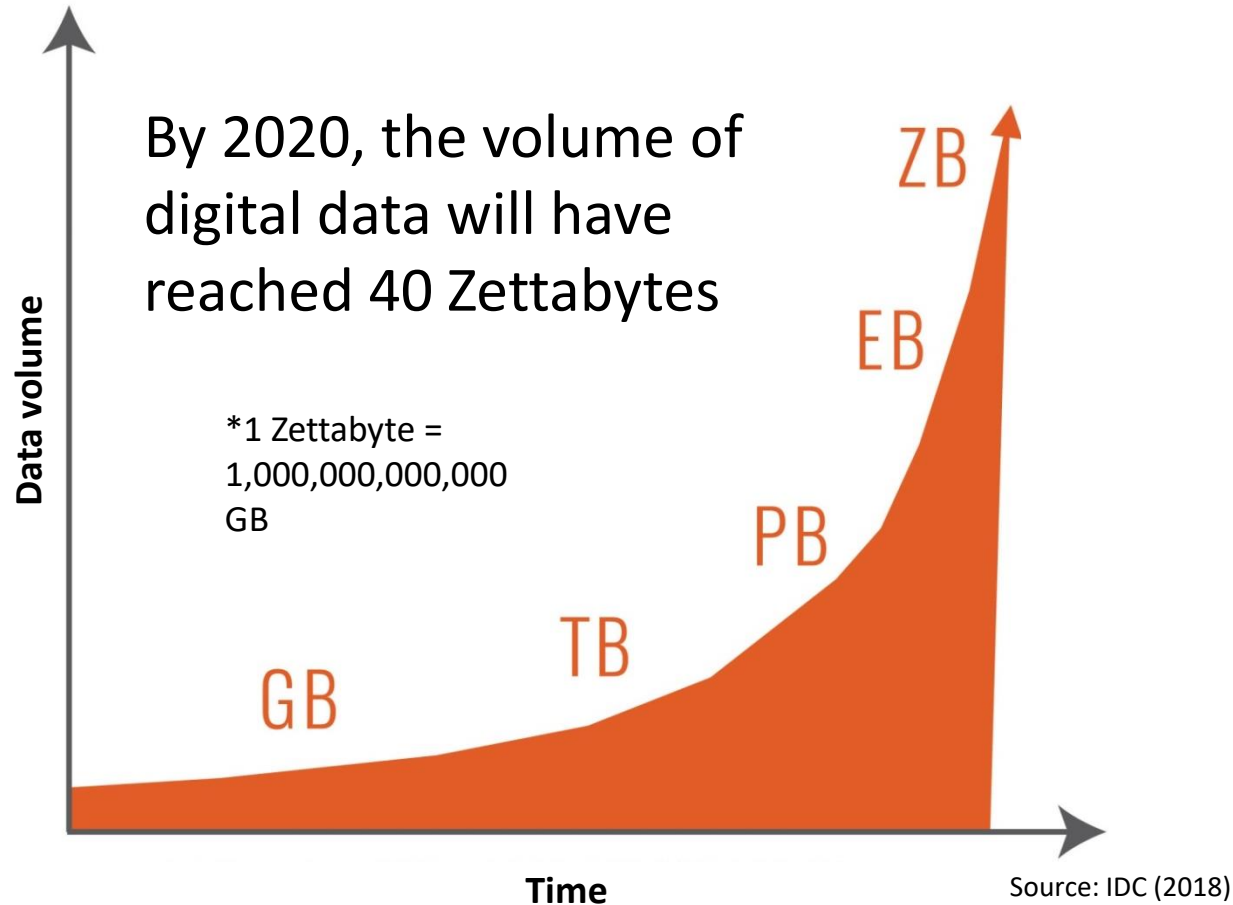
(Average launch mass in kg)



SOURCE: Union for Concerned Scientists database, <https://www.ucsusa.org/nuclear-weapons/space-weapons/satellite-database>



Radiant.Earth
Earth Imagery for Impact



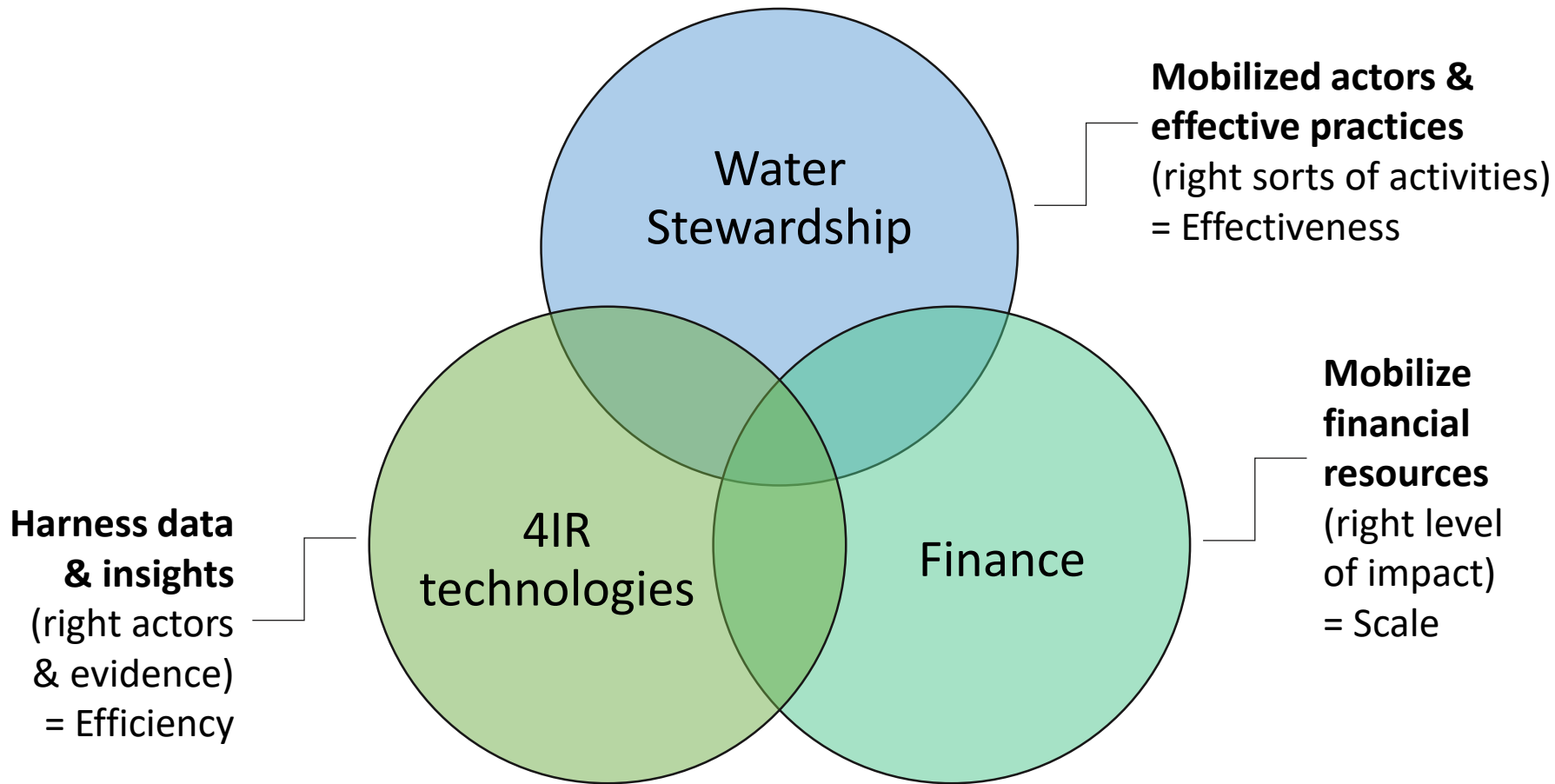


The Fourth Industrial Revolution has arrived.

...and it has the potential to fundamentally re-shape our (freshwater) world.

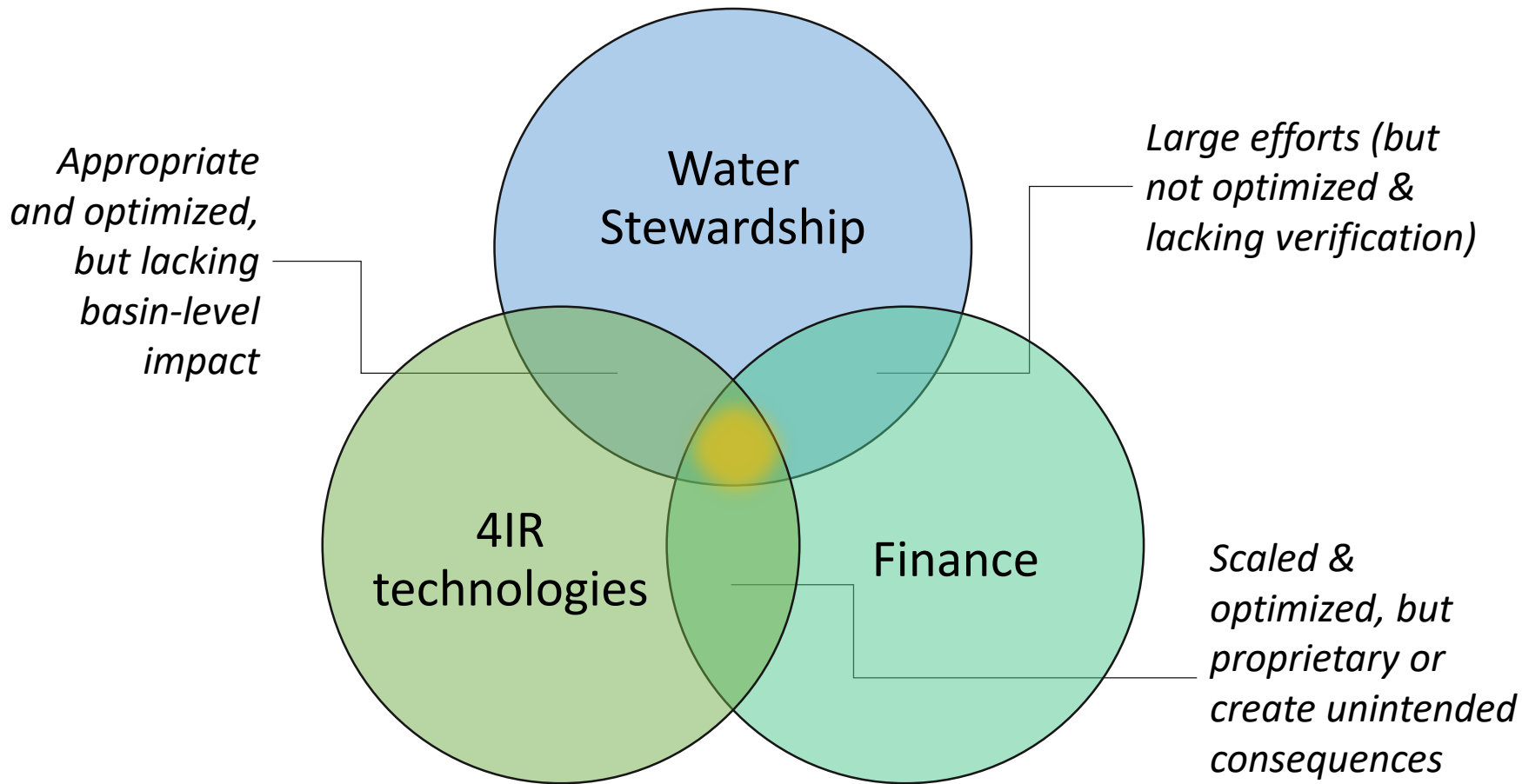


Water Stewardship, 4IR & Finance





Water Stewardship, 4IR & Finance





1) Getting water stewardship right



Driving thought leadership in water stewardship



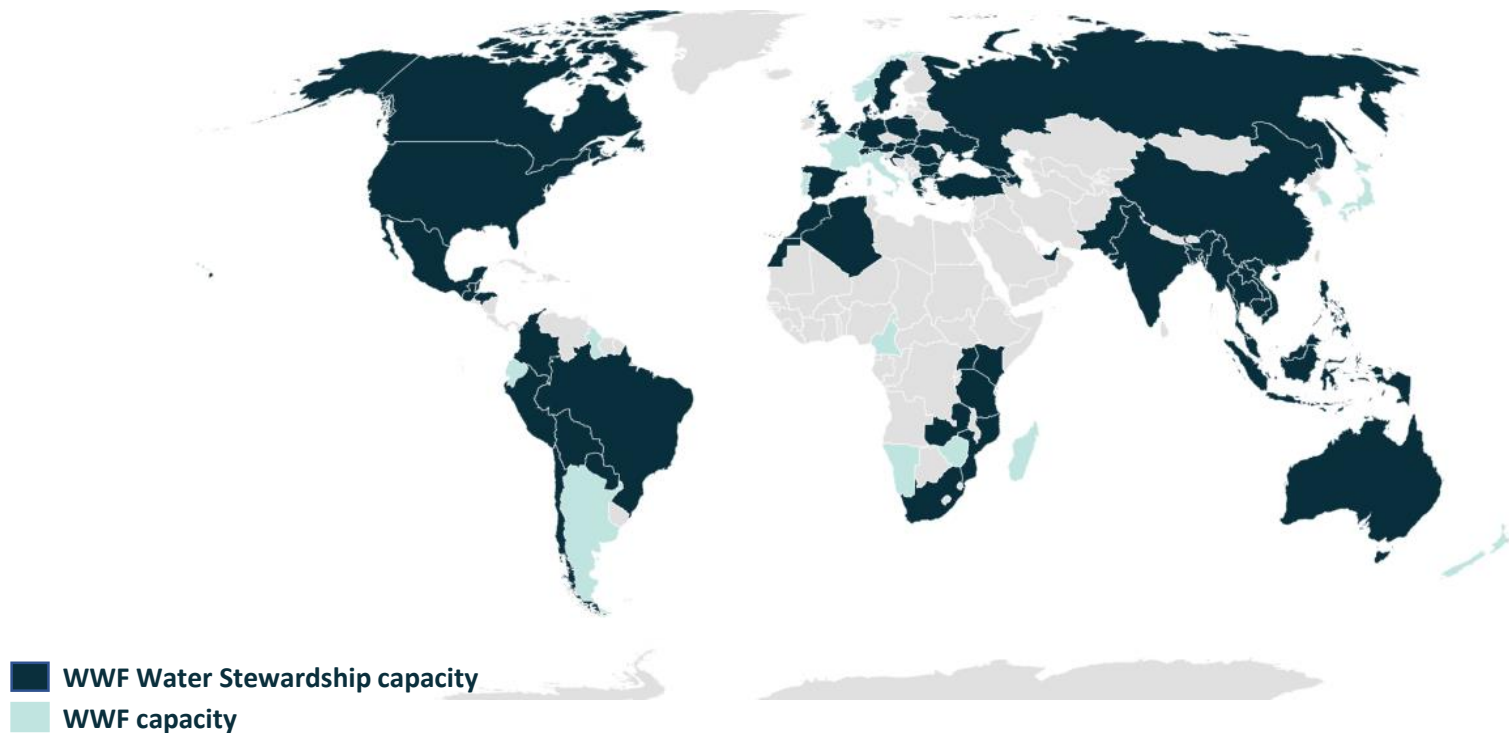
ALLIANCE FOR
WATER STEWARDSHIP





Learning by doing on the ground

*WWF has a network of **over 40 people globally** working on water stewardship*





Harnessing partnerships to implement best practice

Coca-Cola



H&M





2) Harnessing the 4th Industrial Revolution

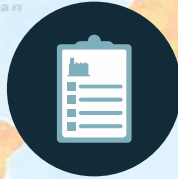


Overview of WWF's Water Risk Filter

Free online tool for companies to explore, assess, respond & value water risks in order to enhance profitability and resilience.



Resources to **explore**
water risks &
stewardship



Assess basin &
operational water
risks



Receive
recommendations to
respond to water risks



Value water with the
right tools & estimate
potential financial
impacts

Leveraging satellites for conservation



Leveraging big data for conservation



5,000 km



Number of mines





3) Mobilizing finance for scale



Leveraging Capital

\$91T

Private Sector
Debt

\$76T

Global
Equity Market

\$42T

Global
Public Debt

\$6.6T

Sovereign
Wealth Funds

\$4.2T

Private Capital

< \$1T
FOUND-
ATIONS

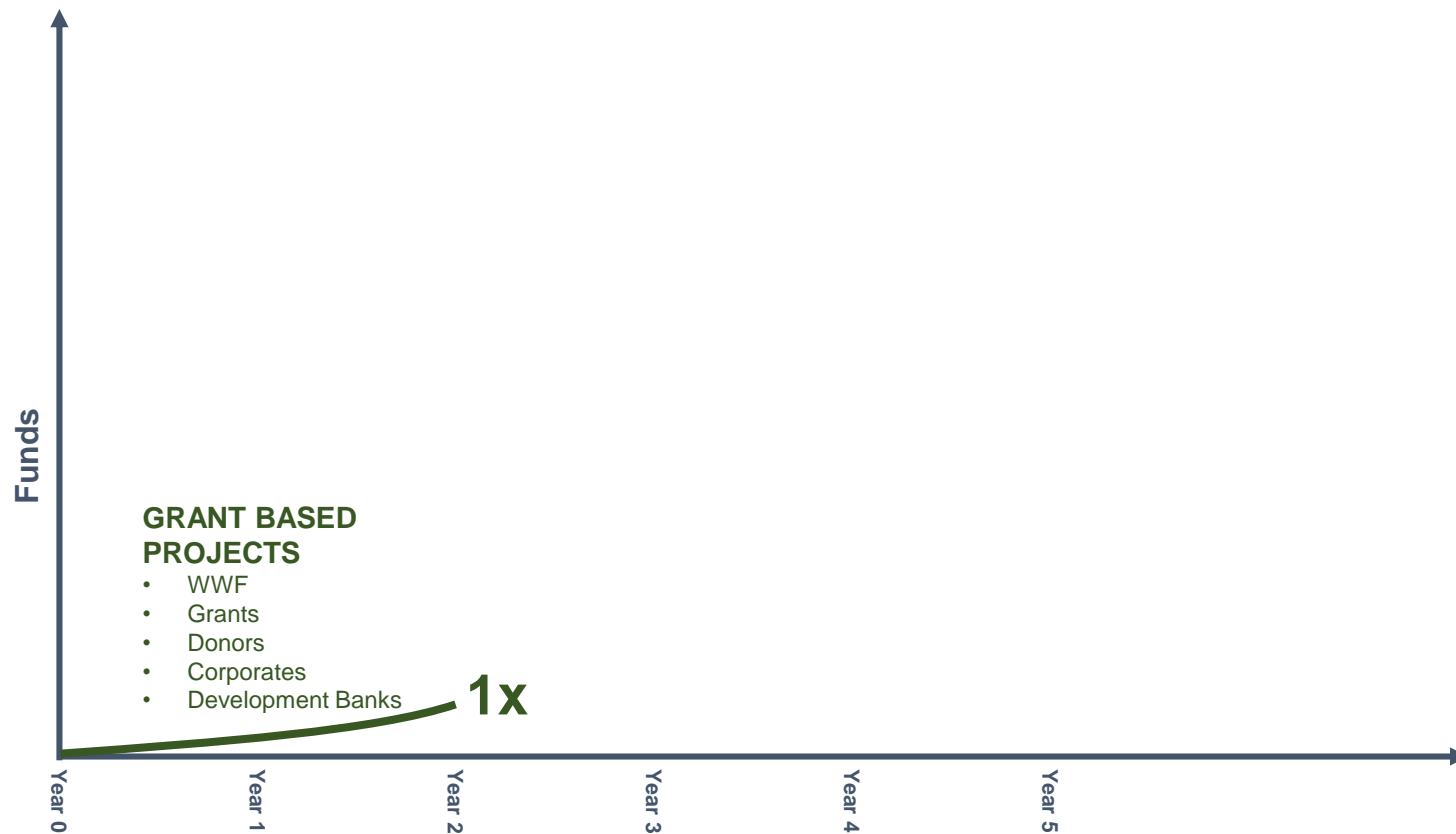
We want to invest in sustainable projects, but we have difficulties identifying sufficient bankable projects

Financiers



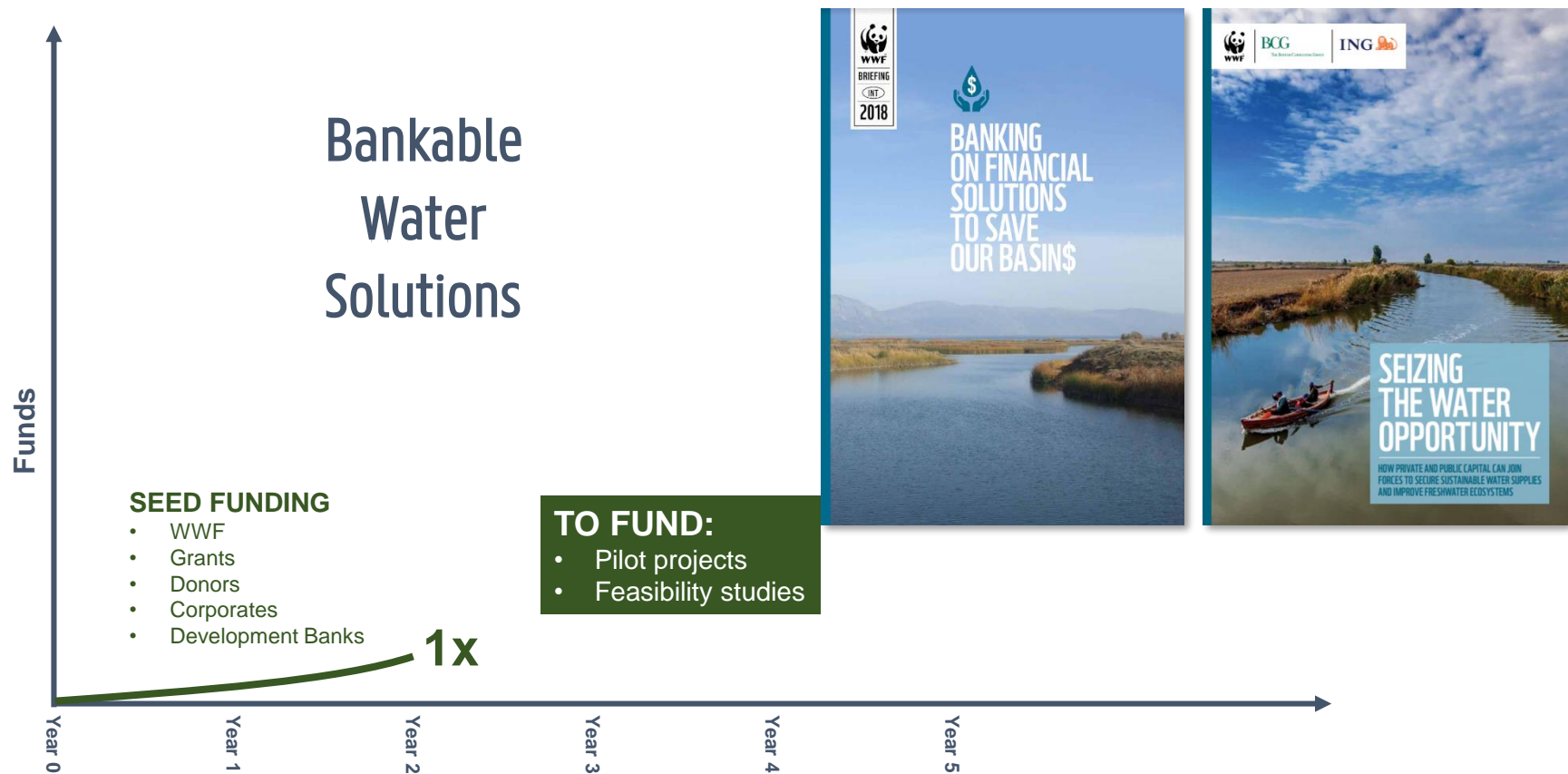


Leveraging Capital



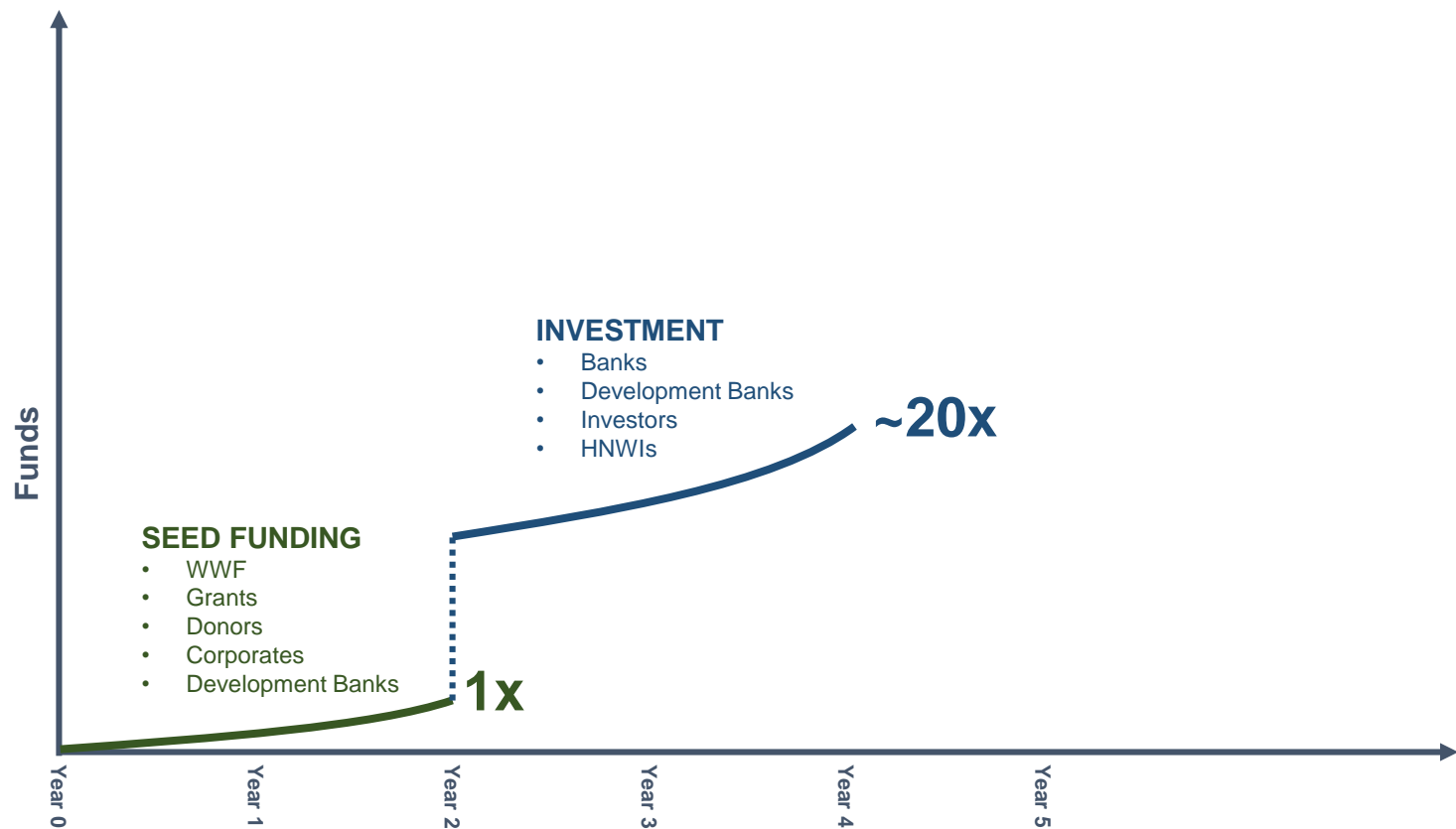


Leveraging Capital



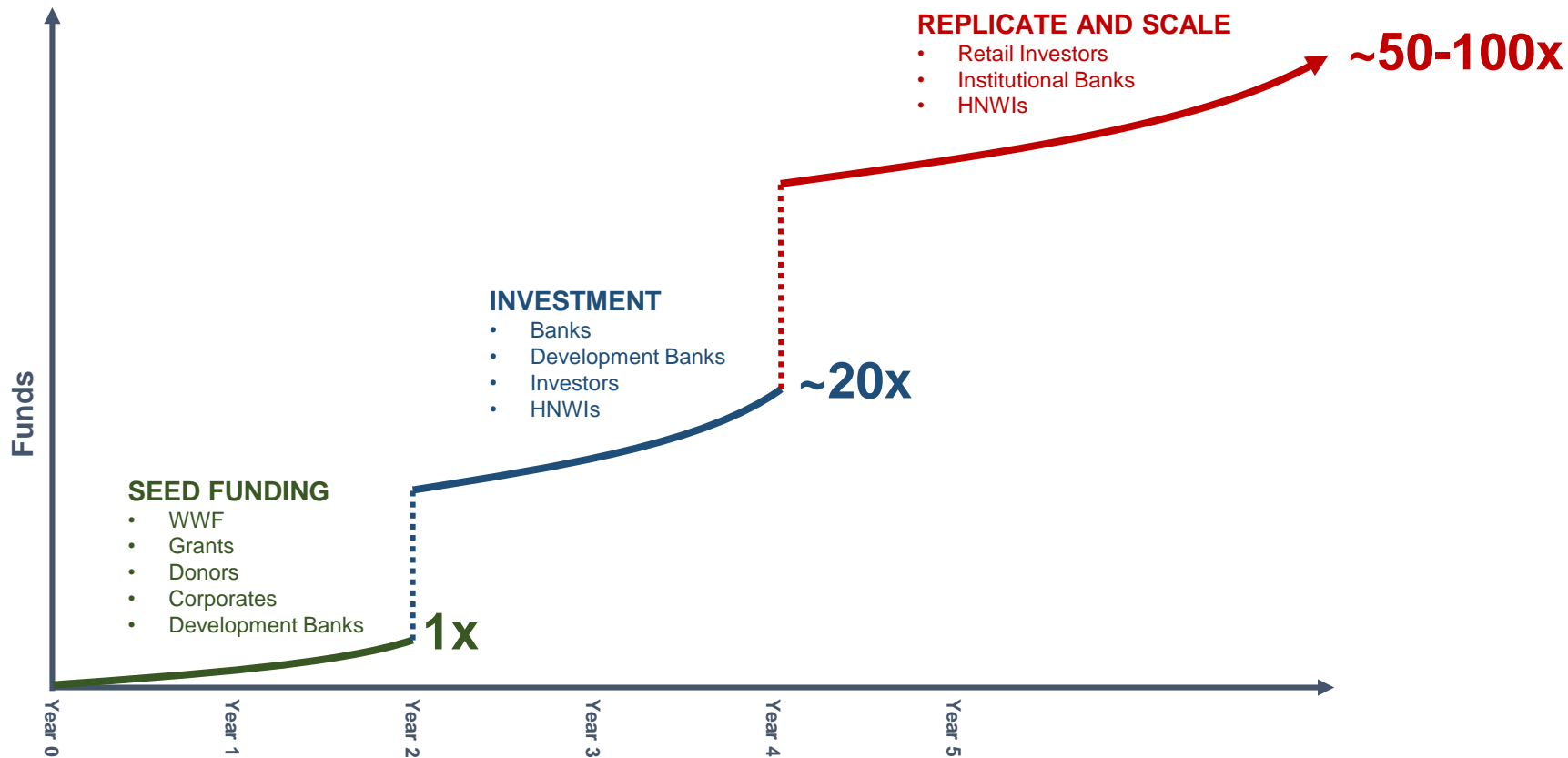


Leveraging Capital



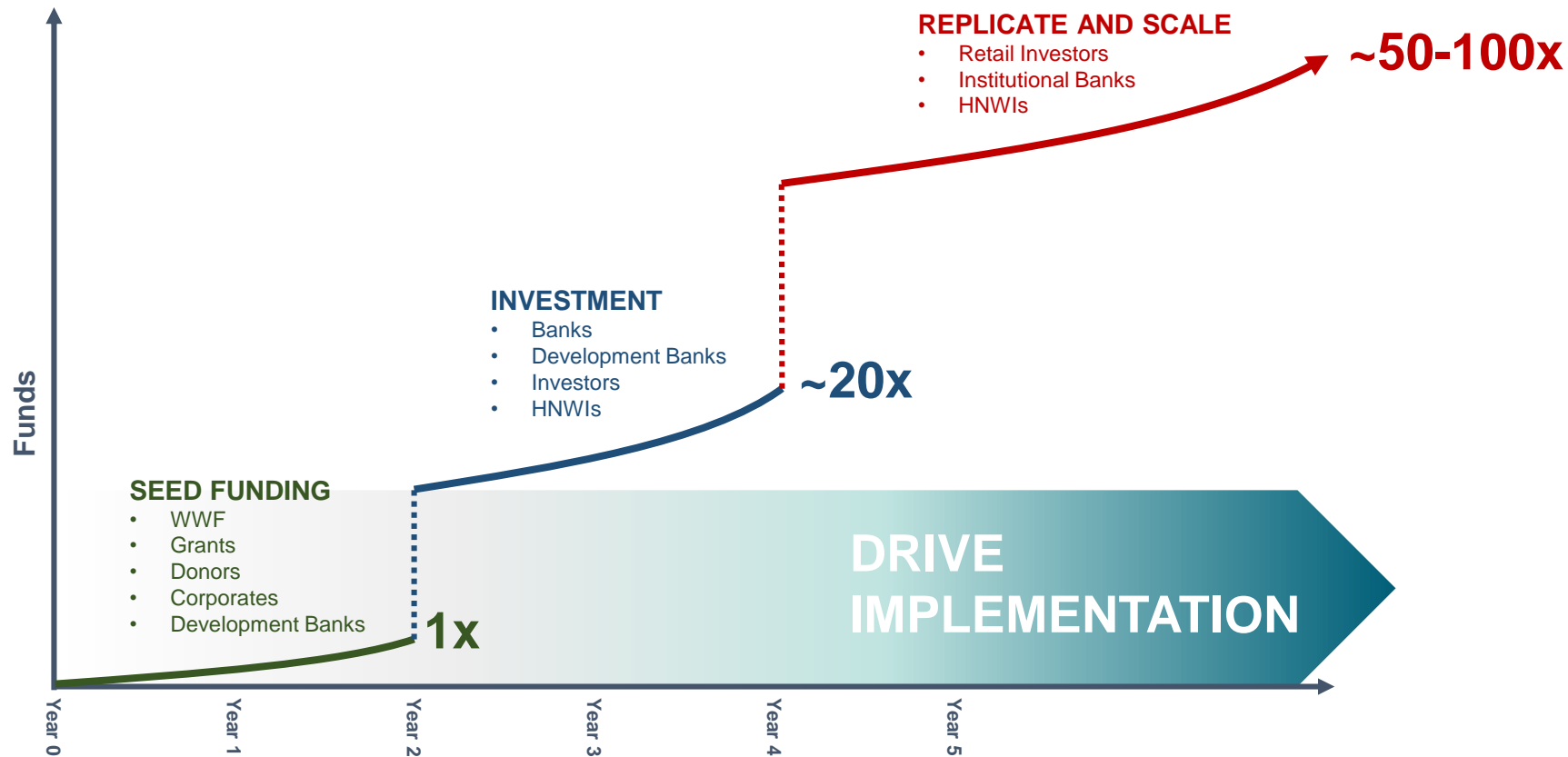


Leveraging Capital



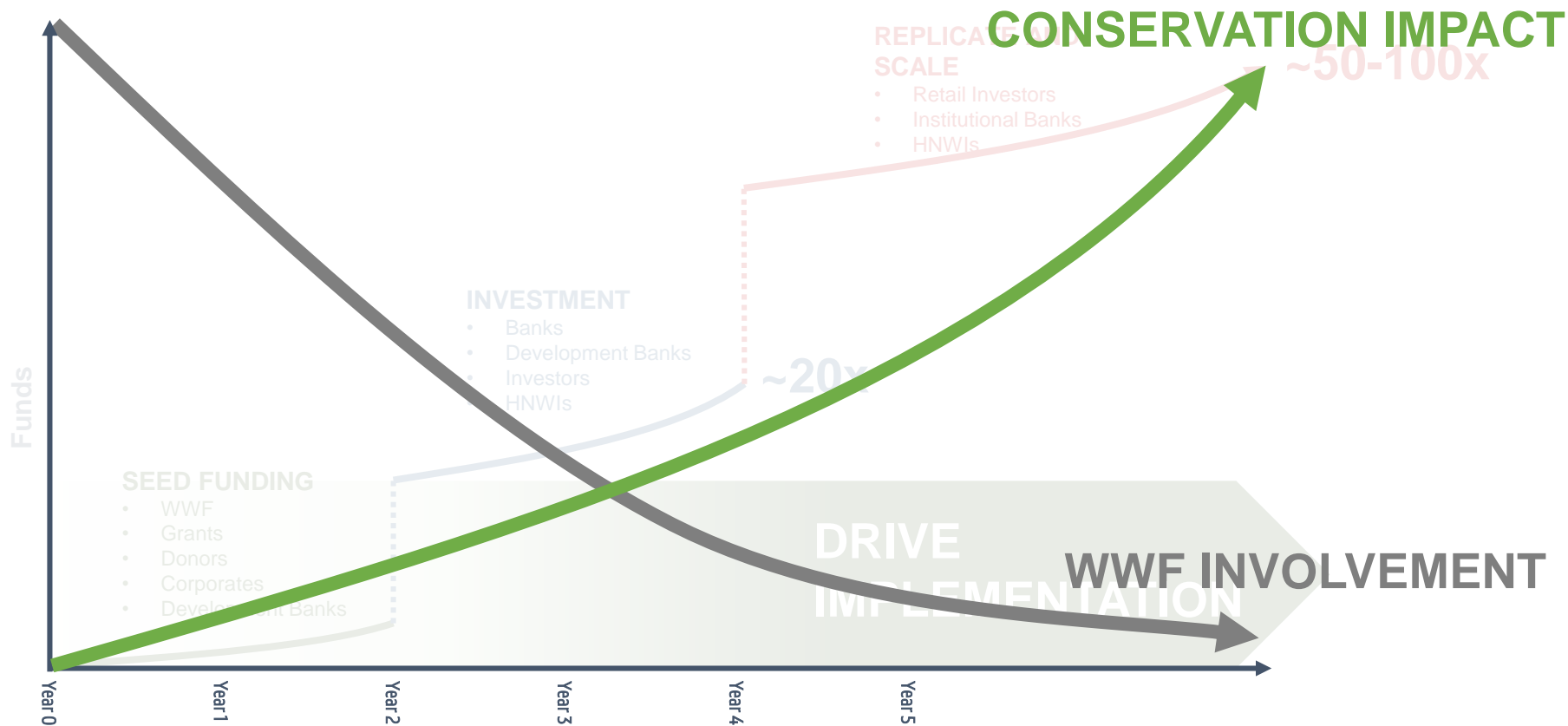


Leveraging Capital



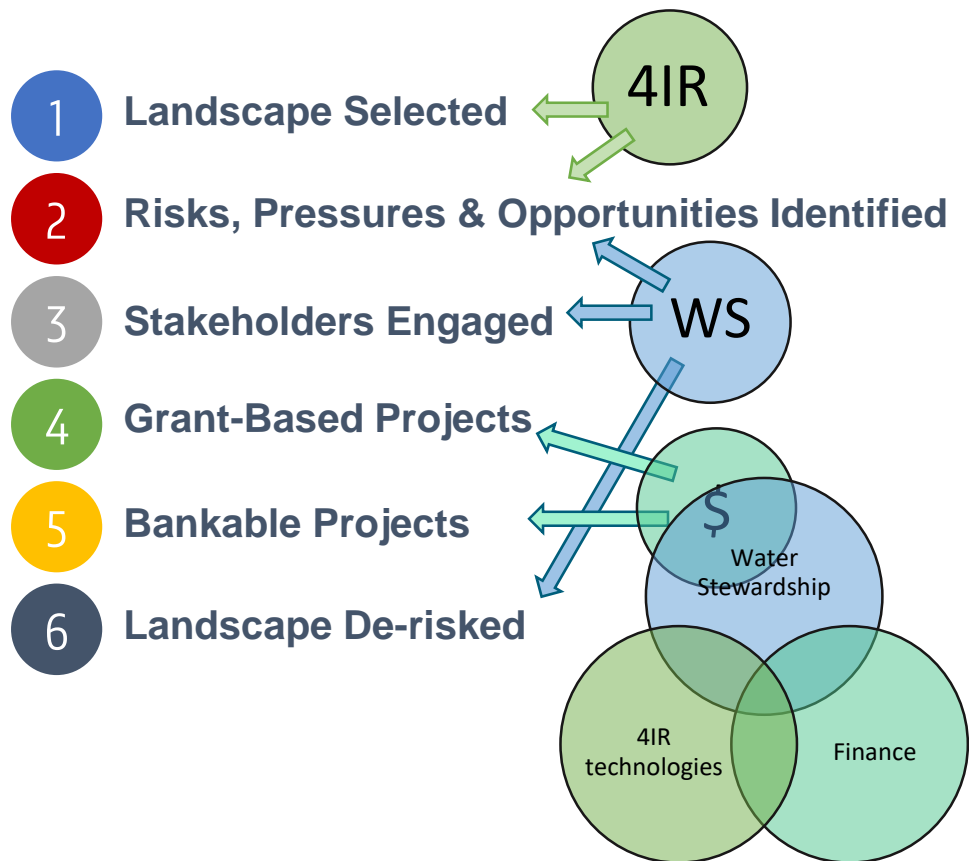
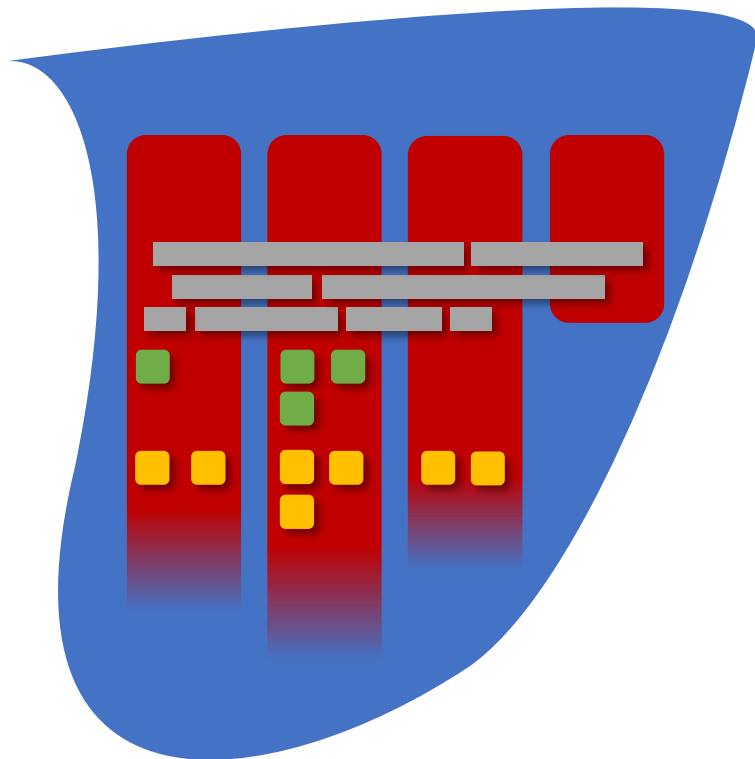


Leveraging Capital





Linking the pieces





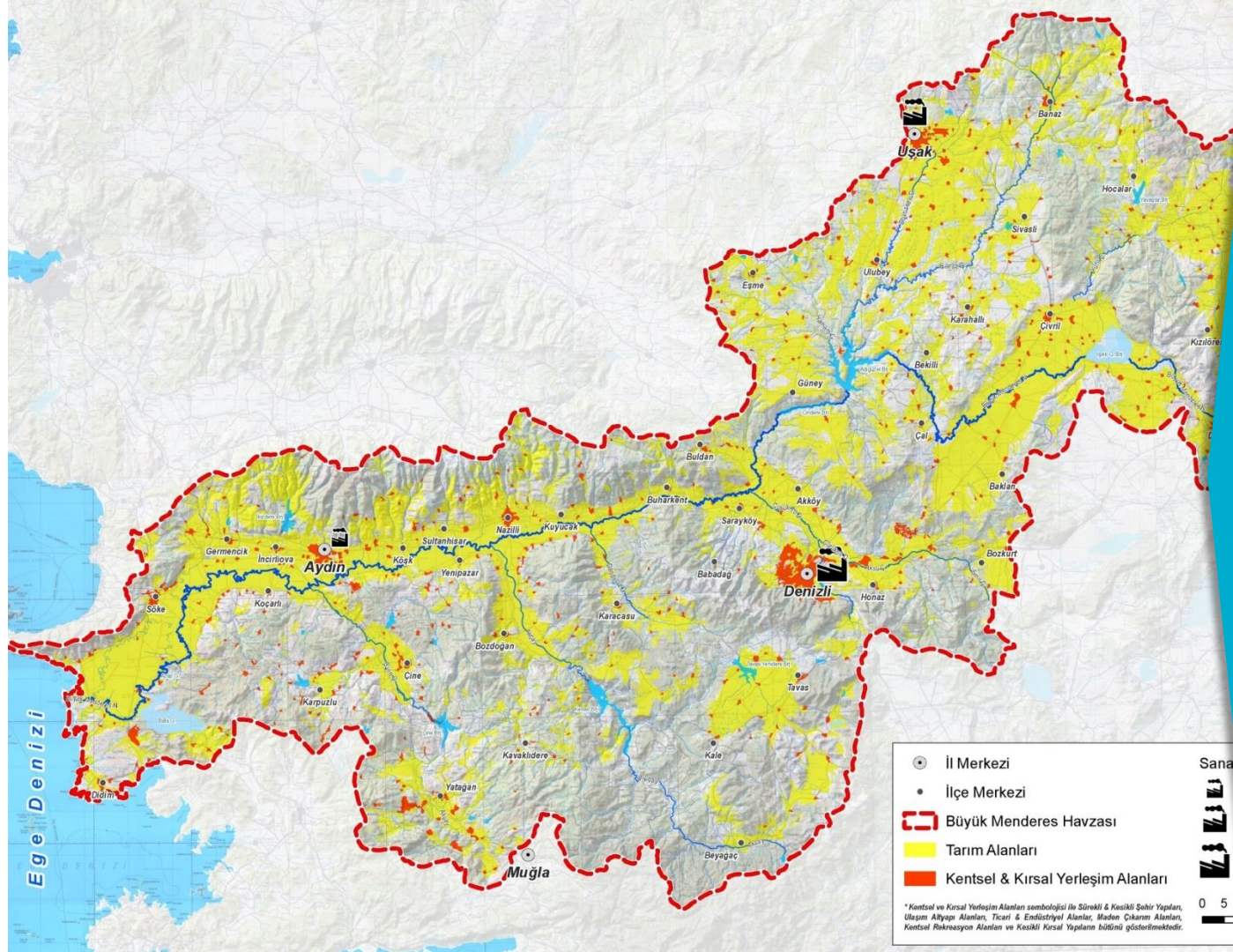
Buyuk Menderes

Buyuk Menderes

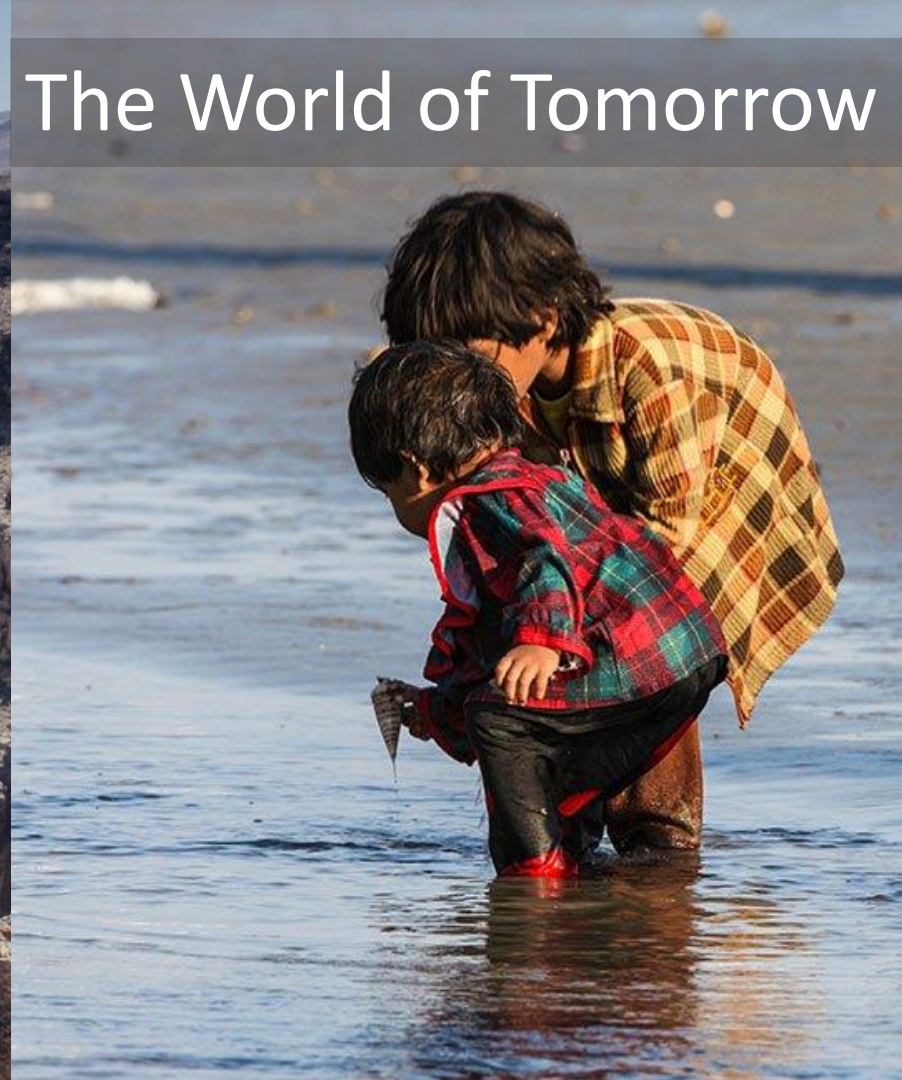
Three important wetlands
Five national parks
Improve water quality...

...by identifying key actors via Water Risk Filter, data scraping...

...and implementing BWS to achieve scale.
AWS? Blockchain?



The World of Tomorrow





Thank you

For more information:

Alexis Morgan

Global Water Stewardship Lead

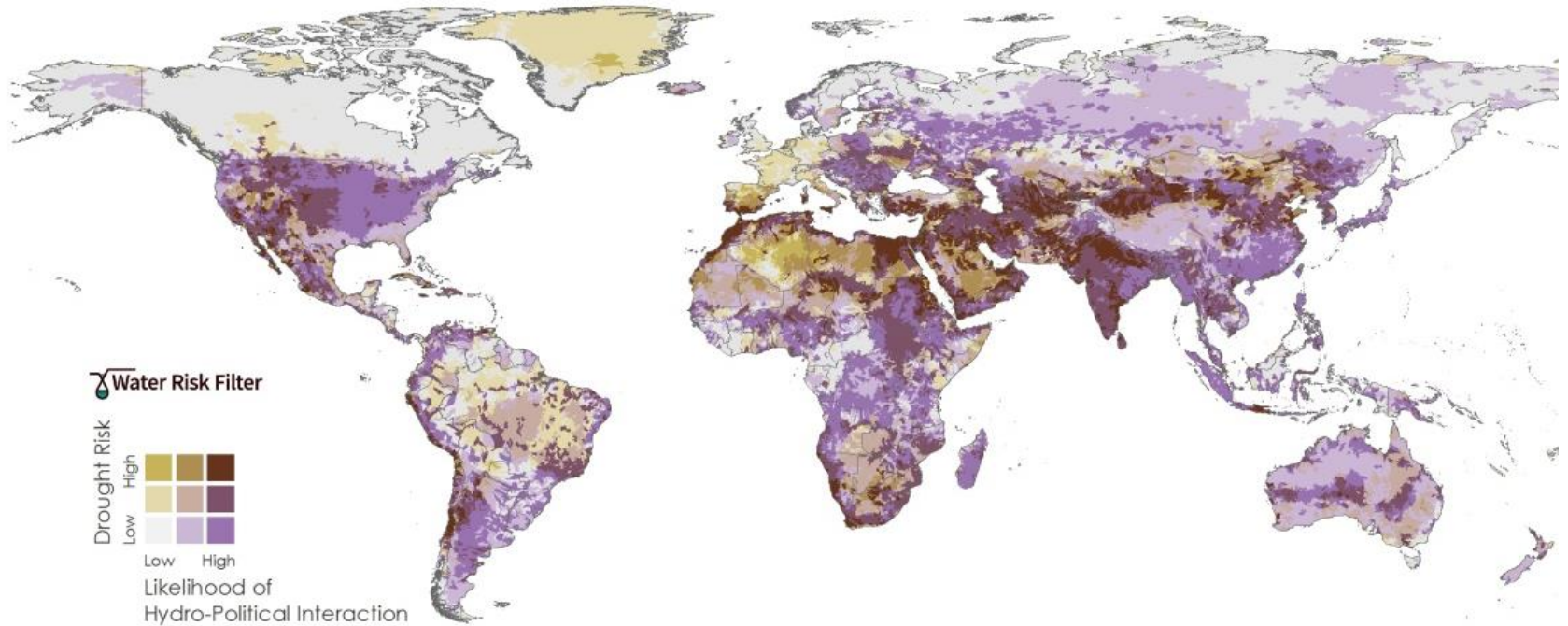
WWF

alexis.morgan@wwf.de

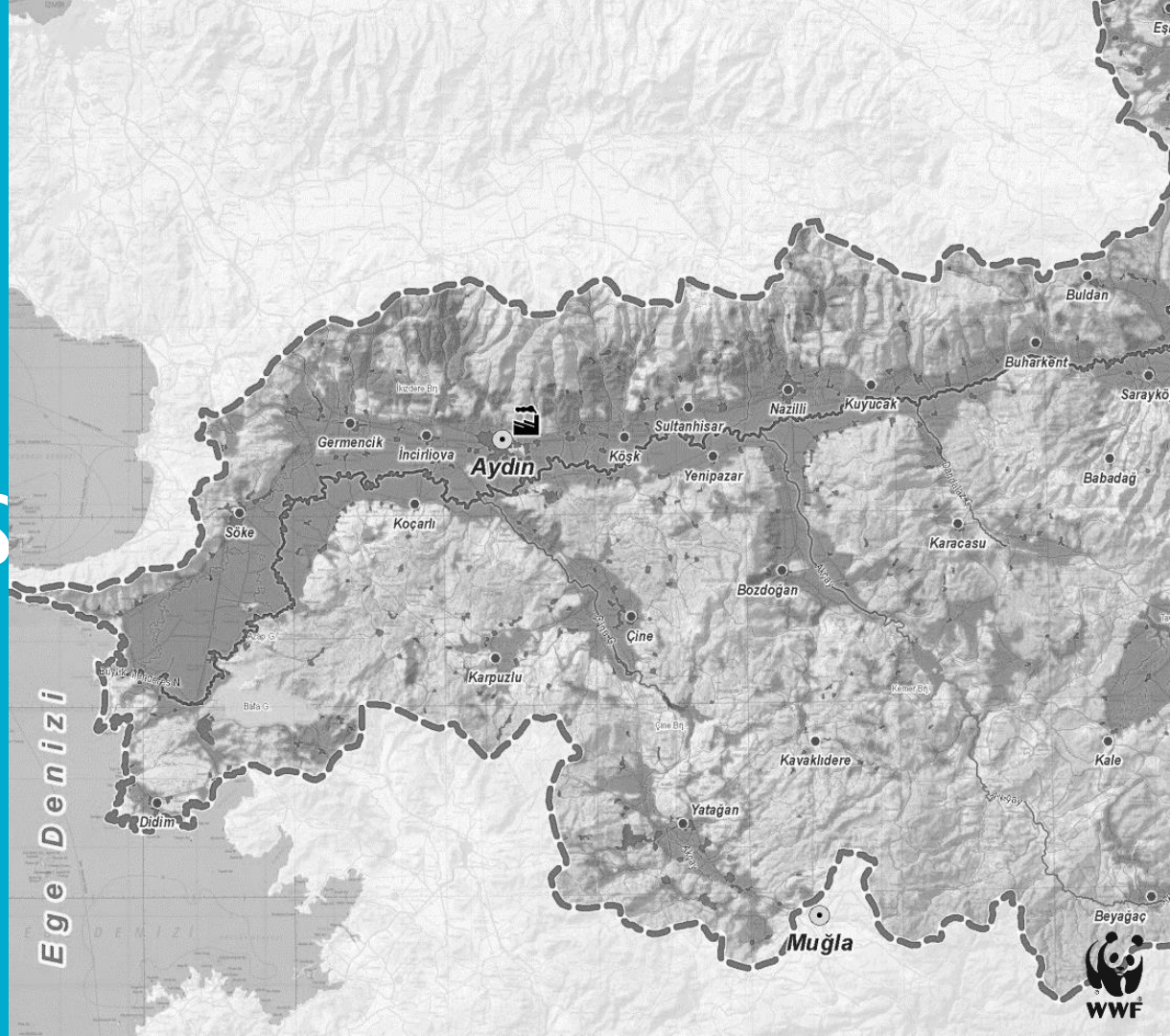


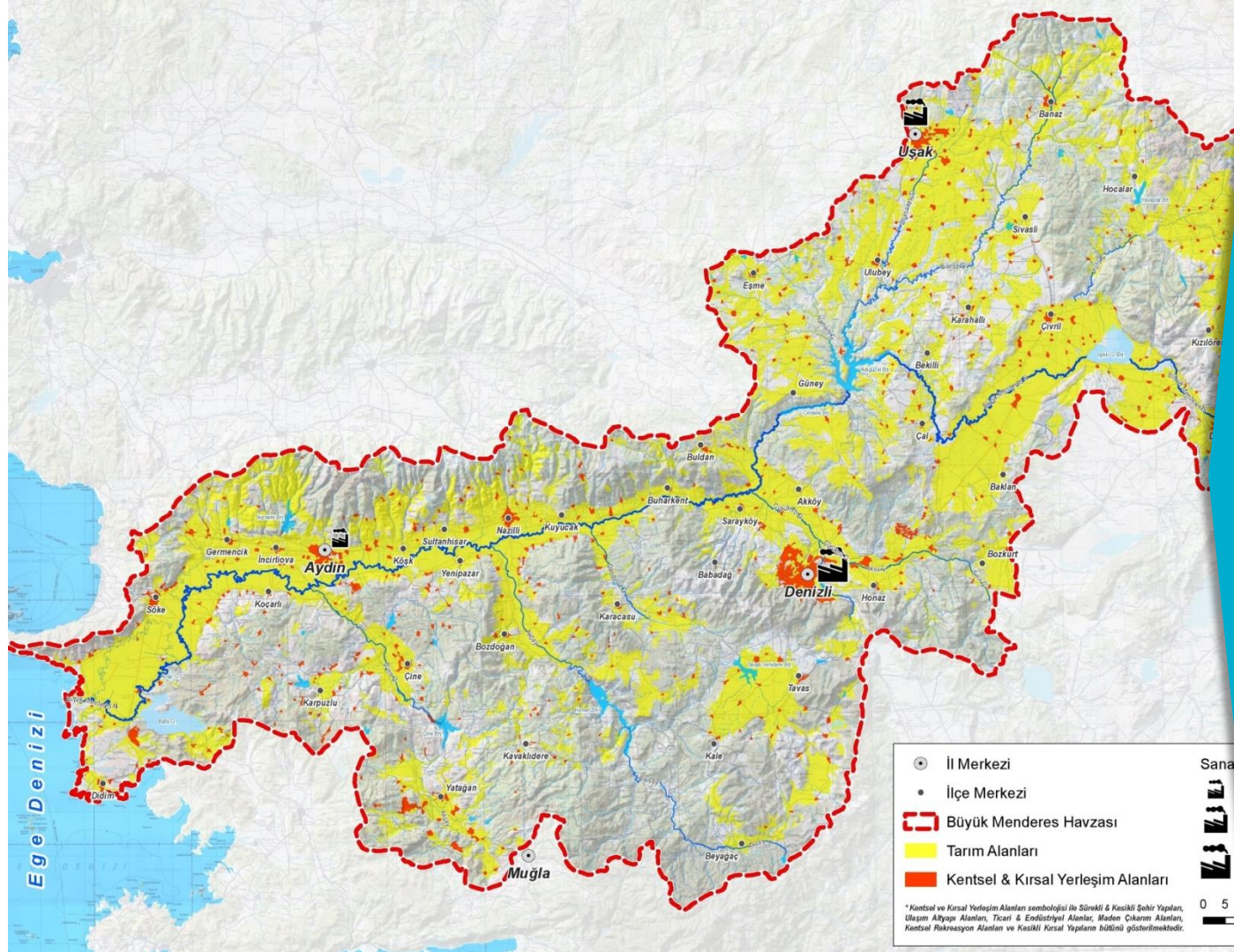
Additional information

The World of Tomorrow



BUYUK MENDERES





USAK



TANNERIES & TEXTILE PLANTS

In Denizli and Usak are the key polluting industries.

KEY PLAYERS: Four industrial parks, fast growing informal textile clusters in Denizli, established national players with stand-alone plants.

KEY RISKS: Regulatory and reputational risk as new Water Master Plan and governance come into effect, and as international customers request more sustainable practices.

DENİZLİ



● İl Merkezi

• İlçe Merkezi

■ Büyük Menderes Havzası

■ Tarım Alanları

■ Kentsel & Kırsal Yerleşim Alanları

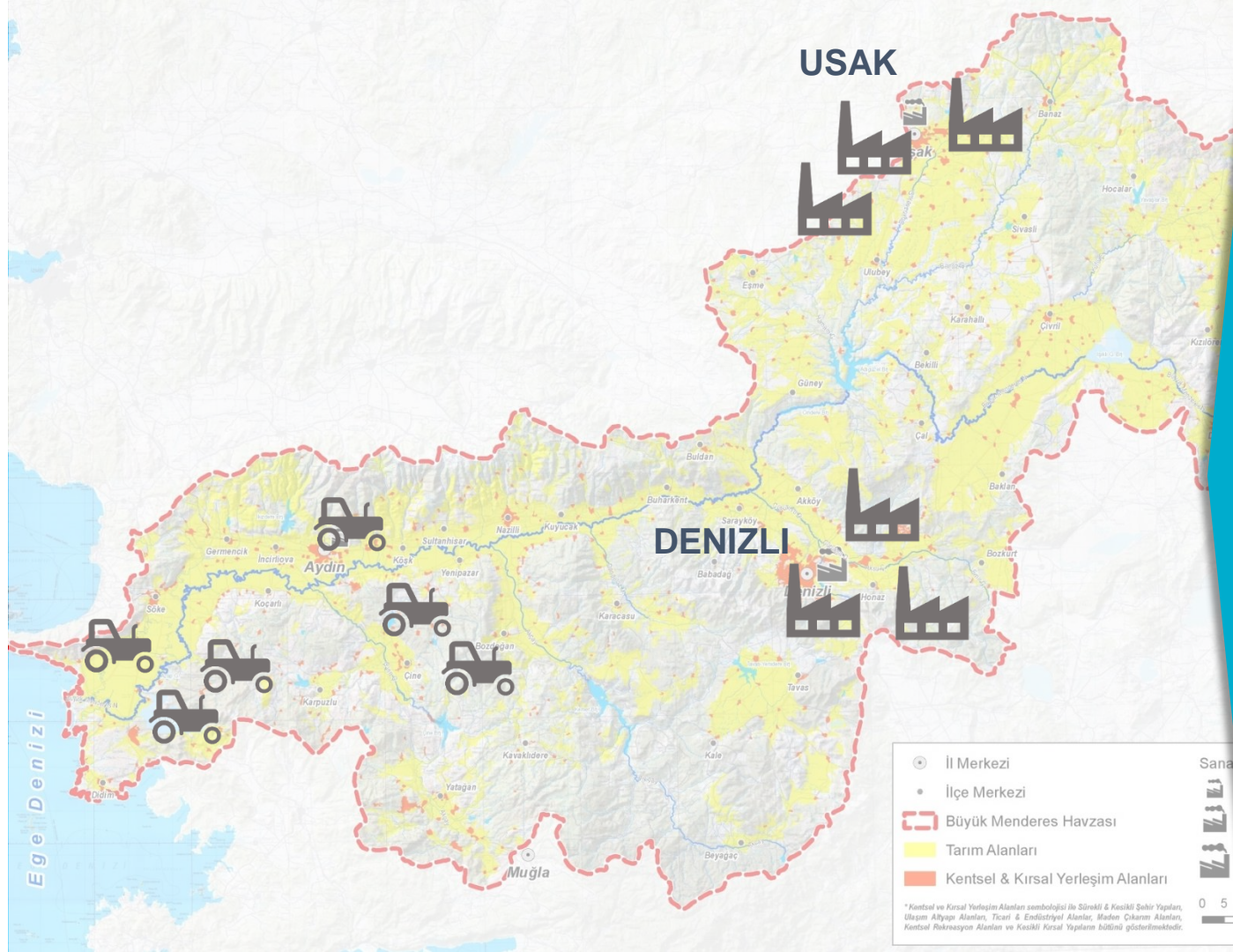
Sanat



0 5 10

* Kentsel ve Kırsal Yerleşim Alanları simbolejisi ile Süratli & Kısıtlı Şehir Yapıları, Ulaşım Altyapı Alanları, Ticari & Endüstriyel Alanlar, Maden Çıkarma Alanları, Kentsel Rekonsiyon Alanları ve Kısıtlı Kırsal Yapıların bölünmesi gösterilmektedir.





COTTON GROWERS

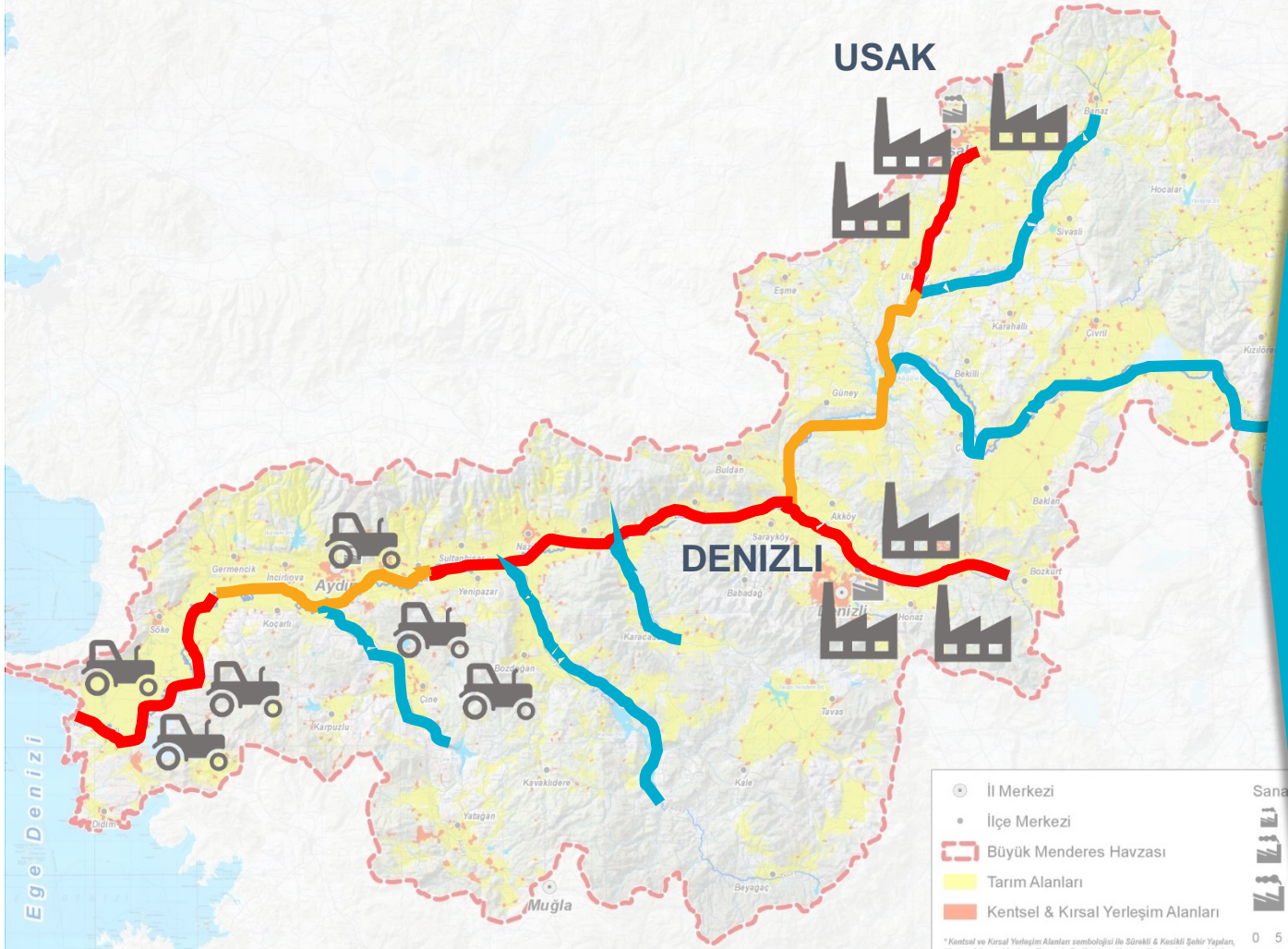
Cotton growing dominates downstream agriculture and is suffering from poor water quality, but also contributes to the problem with intensive pesticide and fertilizer use.

KEY PLAYERS: Mostly smallholders, represented by irrigation unions.

KEY RISKS: Physical risks as poor quality water reduces productivity and increases cost of farming (more fertilizers, pesticides); the resulting practices and lack of resilience is a risk to the entire textile supply chain (cotton quality, reliability of source, reputational risk).



WATER QUALITY





WATER QUALITY



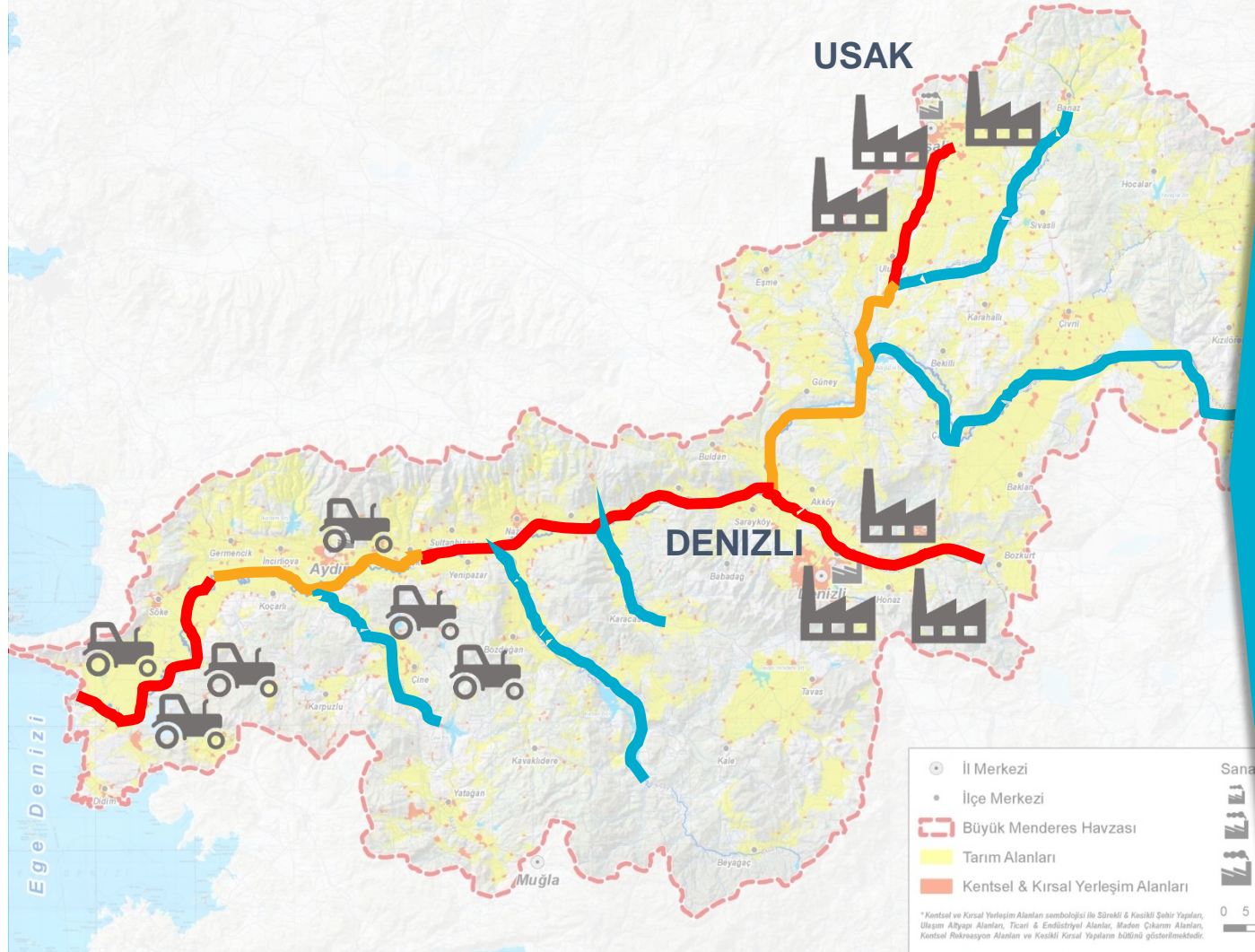
GOOD



POOR



VERY POOR

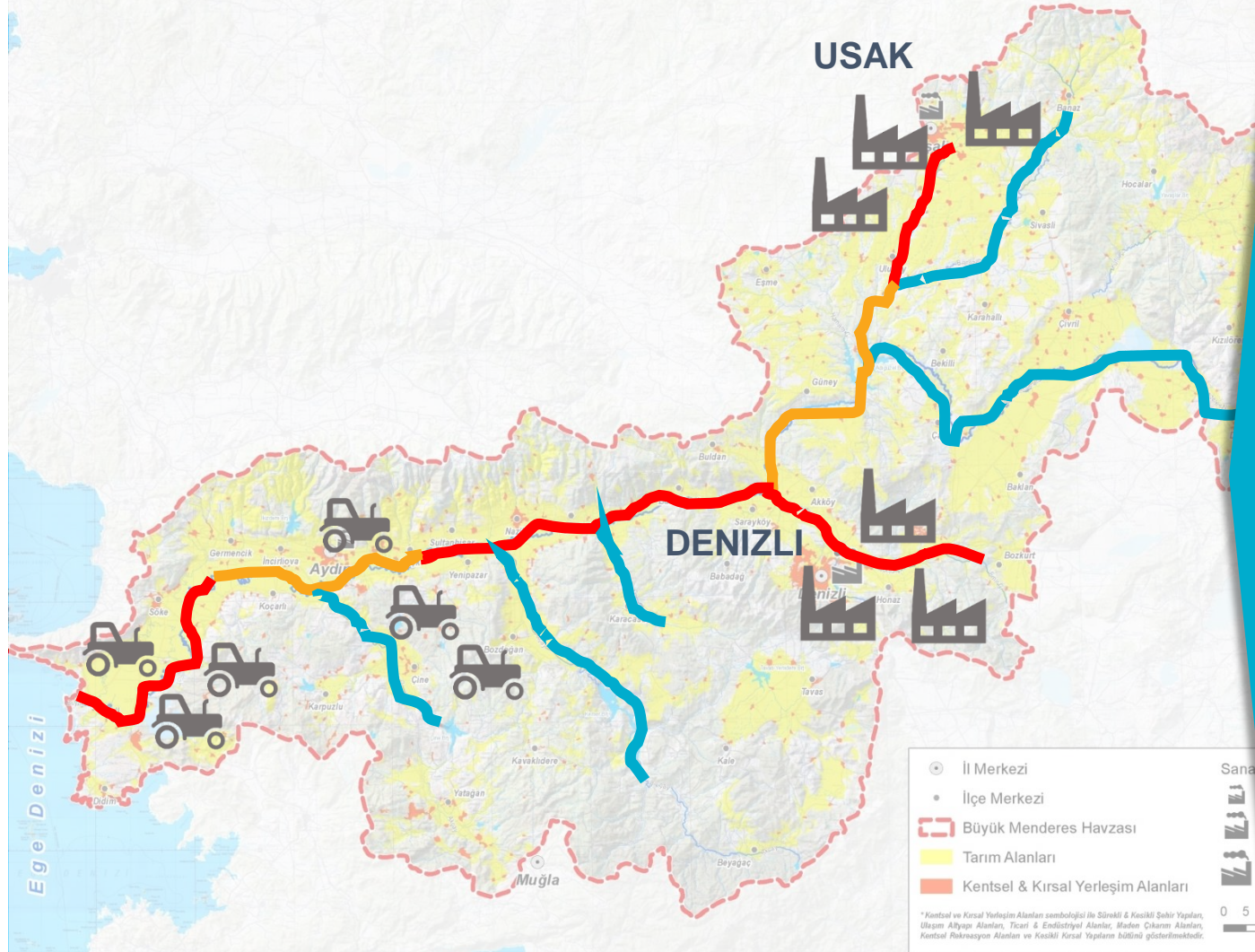


GLOBAL CLOTHING & APPAREL BRANDS

Global clothing and apparel brands rely on both upstream textile and leather plants, and downstream cotton growers.

KEY PLAYERS: All major international clothing and apparel businesses.

KEY RISKS: Loss of access to a competitive and nimble textile industry in Turkey if any above risks materialize; significant reputational risk.



LOCAL AUTHORITIES

Local authorities' developmental trajectory is dependent on sustainable water resources.

KEY PLAYERS: Central government (Department of Water Affairs), and metropolitan authorities of Aydın and Denizli.

KEY RISKS: Loss of competitive edge of the region risks slowing economic development



USAK



DENİZLİ



POTENTIAL
FOR
BANKABLE
PROJECTS

● İl Merkezi

● İlçe Merkezi

■ Büyük Menderes Havzası

■ Tarım Alanları

■ Kentsel & Kırsal Yerleşim Alanları

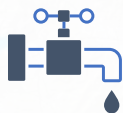
* Kentsel ve Kırsal Yerleşim Alanları sınırları, İl Sanayi & Ticaret Bakanlığı, Tarım ve Orman Bakanlığı, Çevre, Şehircilik ve İklim Değişikliği Bakanlığı, Kültür Varlıkları ve Anıtlar Bakanlığı, Milli Parklar, Kentsel Dönüşüm Alanları ve Kentsel Dönüşüm Alanları sınırları göstermektedir.

Sanayi



0 5 10





Investment in cleaner production practices, e.g.,

- Change in chemicals used
- Improved or modified equipment
- Increased automation
- Improved maintenance and monitoring
- Outflow treatment and recovery
- ...

Required interventions differ per company

Illustrative – based
on pilot in Izmir



Impact



Cost savings

Reduced use of:



Water

40k m³/year
(5-10%)

€1k/year



Chemicals

220 ton/year
(10-20%)

€3k/year



Energy

7000 MWh
(~4,500 barrels
of oil)

€190k/year

For this company: total savings of
~**€200k/year** through investment of
~**€90k** (substantial compared to profit);
investment recovered within **half a year**

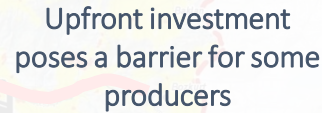
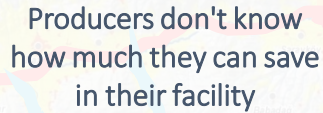
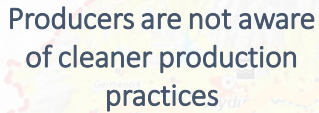
STEP 1: GATHER DATA

Textile data was sourced from a Izmir Development Agency (IZKA) pilot with Ekoten textile manufacturer.

Therefore we had a really good idea of the economics.

Cotton growers were excluded for now.

Source: Izmir Development Agency (IZKA) pilot with Ekoten textile manufacturer

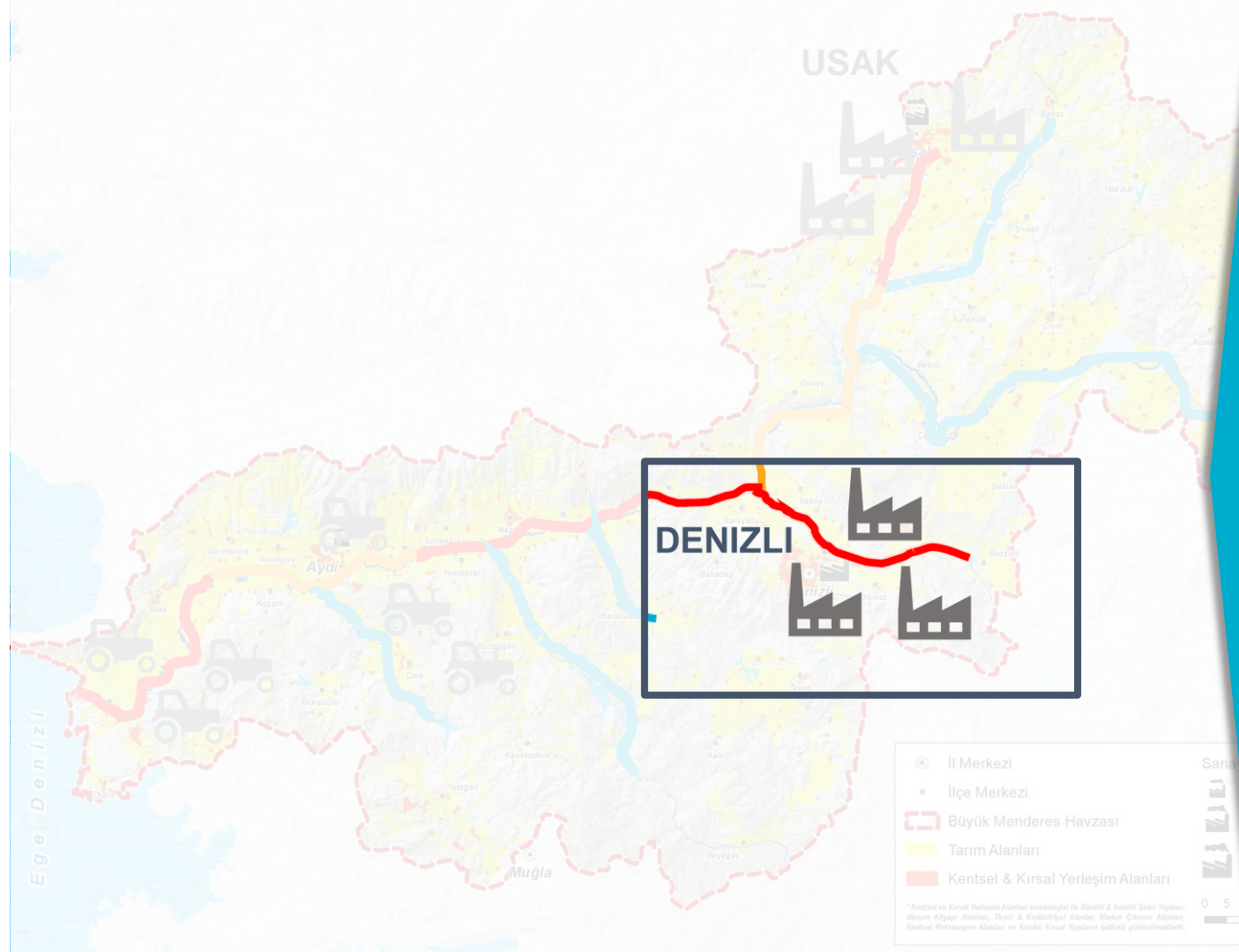


STEP 2: PILOT SITE CHOSEN

40 textile factories were targeted for the pilot.

\$10k - \$25k was needed to do a study on each factory.

A chemical study was carried out with another NGO to reduce the site level effort required





Global brands



Working with H&M to organize a 'call for action' to create momentum with global brands and producers



Industry representation



If there is an economic benefit, I'm sure many of our members will participate

- Board member industry association



Development agency



Local development agency (GEKA) unofficially committed grants for 30 feasibility studies to be performed

Need to find other grant provider if GEKA pulls back



Industrial park owners



We are very eager to reduce our water and chemical use, but we need help on how to do it

- Manager industrial park



Technical consultants



Already working with consultant (GTE Karbon) on similar pilots in Denizli



Equipment providers



No contact yet; to be determined if there is a large impact on specific pieces of equipment across many plants



Banks/Financial players



Garantibank and TTGV are keen to participate, have funds dedicated to sustainability

To investigate possibility to use government guarantee fund

STEP 3: BUILD PARTNERSHIPS



* Kentsel ve Kırsal Yerleşim Alanları sınırları Türkiye İstatistik Kurumu tarafından belirlenmiştir. Harita, Su Kaynakları, Tarım ve Orman Bakanlığı, Çevre, Şehircilik ve İklim Değişikliği Bakanlığı, Kentsel Yerleşim Alanları ve Kırsal Yerleşim Alanları sınırları göstermektedir.





H&M GEKA

\$10 to \$20k

Grants for
feasibility
studies

**STEP 4:
STRUCTURE
DEAL**



• İl Merkezi

• İlçe Merkezi

■ Büyük Menderes Havzası

■ Tarım Alanları

■ Kentsel & Kırsal Yerleşim Alanları

Sanayi

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0 5

* Kentsel ve Kırsal Yerleşim Alanları sınırları İl Statüsü & Kentsel Gelişim Yapanı, İlçeleri Atayma Alanları, Tarım & Endüstriyel Alanlar, Maden Çıkarma Alanları, Kentsel Rekreasyon Alanları ve Kentsel Kentsel Yerleşim Alanları göstermektedir.





H&M GEKA

GarantiBank

\$90 to \$200k
Bank loans
made to factories

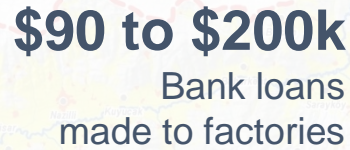
\$10 to \$20k
Grants for
feasibility
studies

STEP 4: STRUCTURE DEAL

- İl Merkezi
- İlçe Merkezi
- Büyük Menderes Havzası
- Tarım Alanları
- Kentsel & Kırsal Yerleşim Alanları

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Grants for feasibility studies

Bank loans are repaid
with interest



STEP 4: STRUCTURE DEAL





H&M GEKA



\$10 to \$20k

Grants for
feasibility
studies

\$90 to \$200k

Bank loans
made to factories

Loans + Interest

Bank loans are repaid
with interest

Purchase
orders

**STEP 4:
STRUCTURE
DEAL**





H&M GEKA

Feasibility Studies

\$400,000 to \$800,000

Paid by WWF, H&M, GEKA
40 x (\$10k to \$20K)

Bank Loans

\$3,600,000 to \$8,000,000

Given by GarantiBank (With Interest)
40 x (\$90k to \$200k)

\$10 to \$20k
Grants for
feasibility
studies

\$90 to \$200k
Bank loans

loans + interest
Bank loans are repaid
with interest

Purchase
orders

- İl Merkezi
- İlçe Merkezi
- Büyük Menderes Havzası
- Tarım Alanları
- Kentsel & Kırılma Alanları

ECONOMIC RECAP