International Workshop on Sustainability Science 2015
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Evidence-based Decision Making

Nature-oriented River Restoration

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United Nations Educational, Scientific and Cultural Organization

RCUWM TEHRAN

Iran University of Science &Technology

Member Countries

Afghanistan

Bahrain

Bangladesh

Egypt

Germany

India

Iraq

Kuwait

Lebanon

Oman

Pakistan

Syria

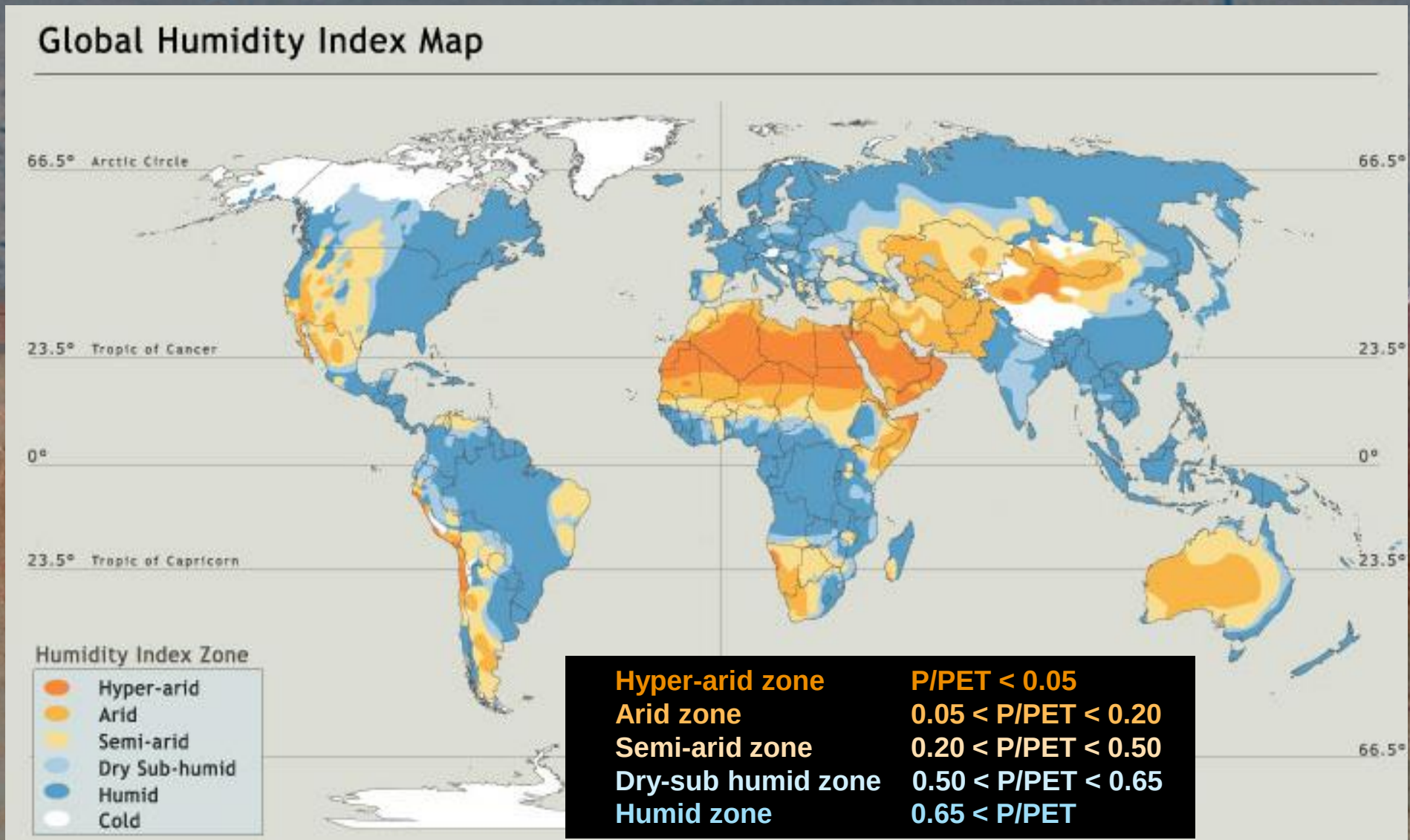
Tajikistan

Yemen

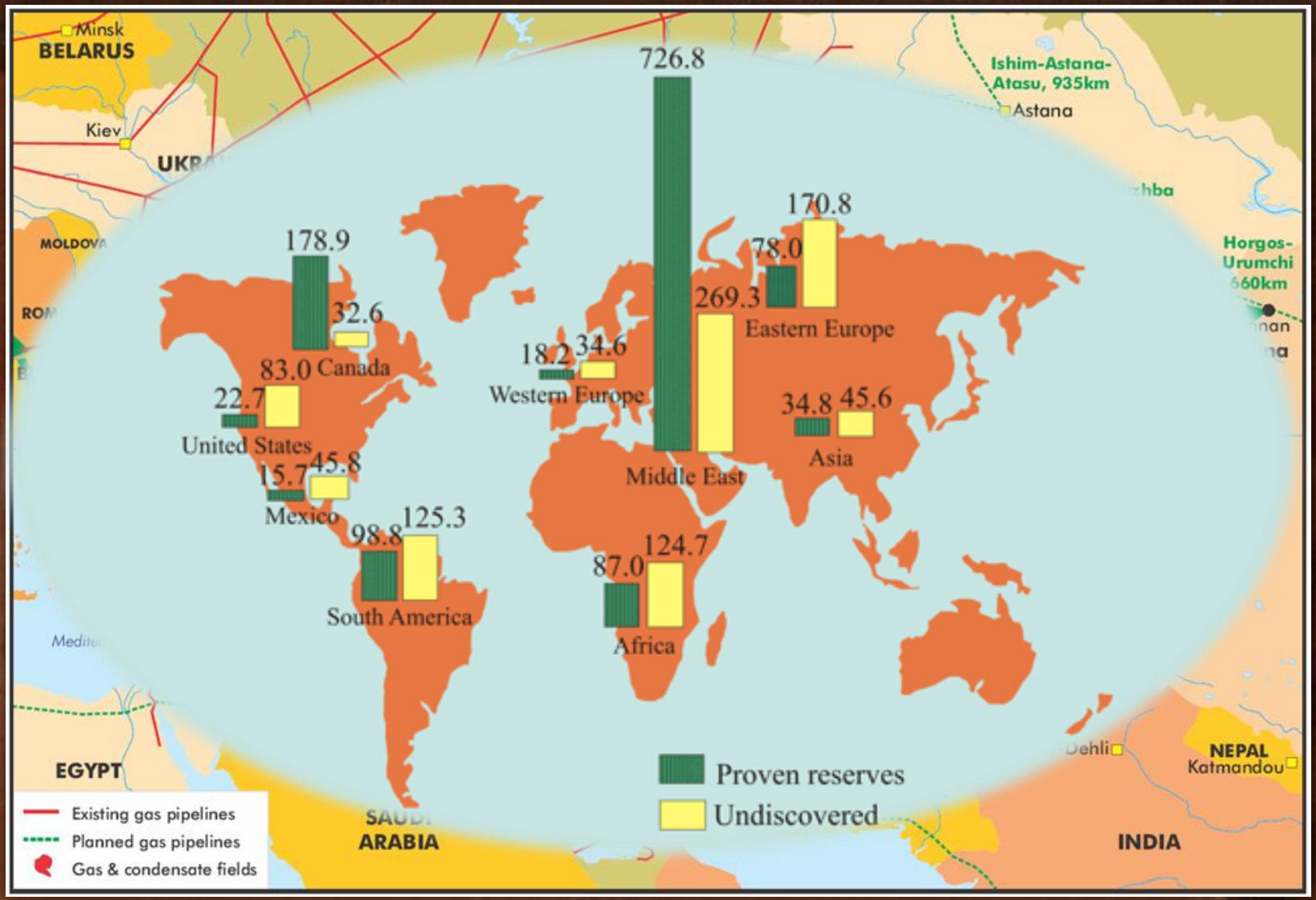
Zimbabwe

Arid and Semi-arid Areas

Approximately half of the Earth's land surface and 20% of its population

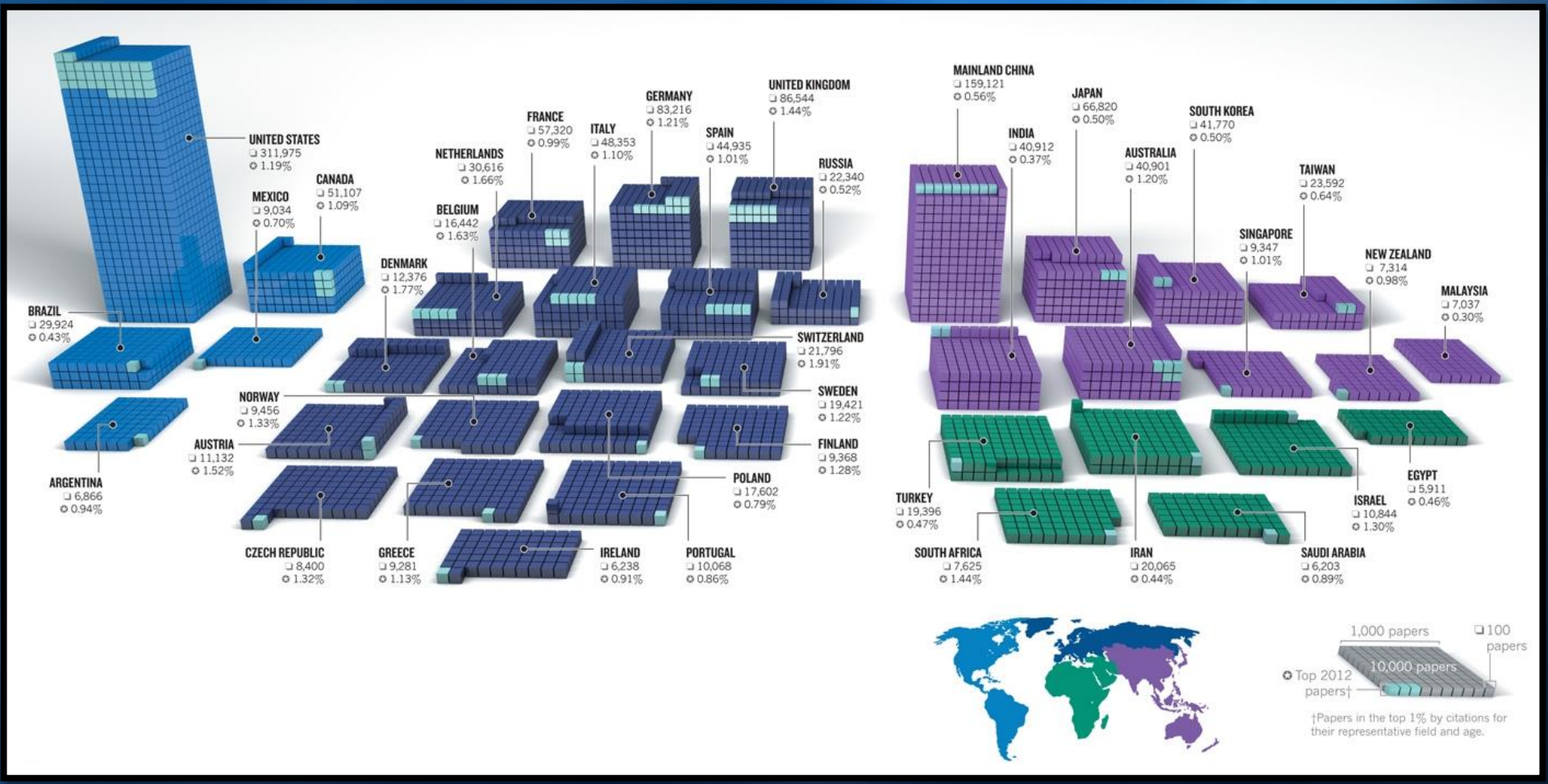


Important Energy Source

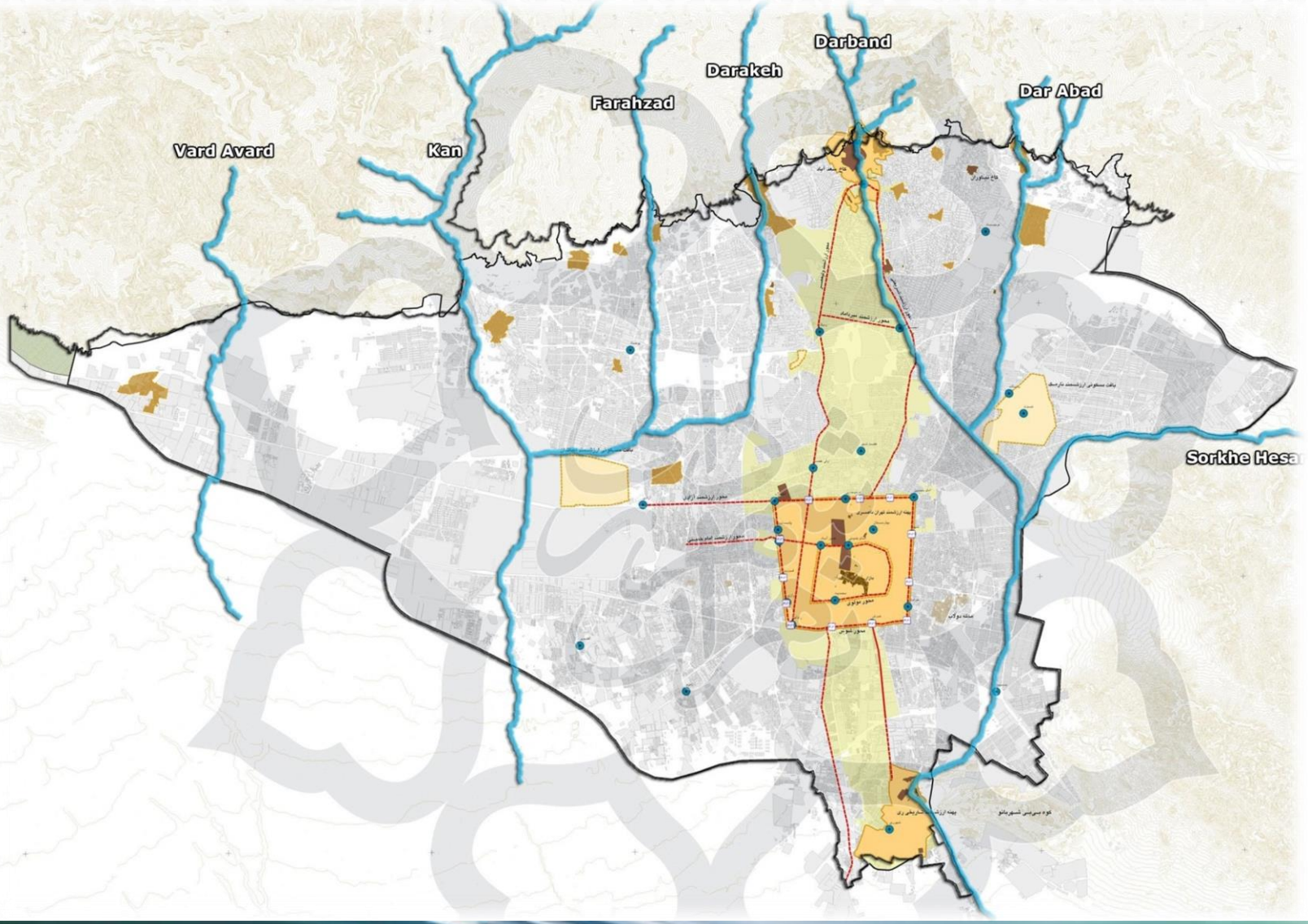


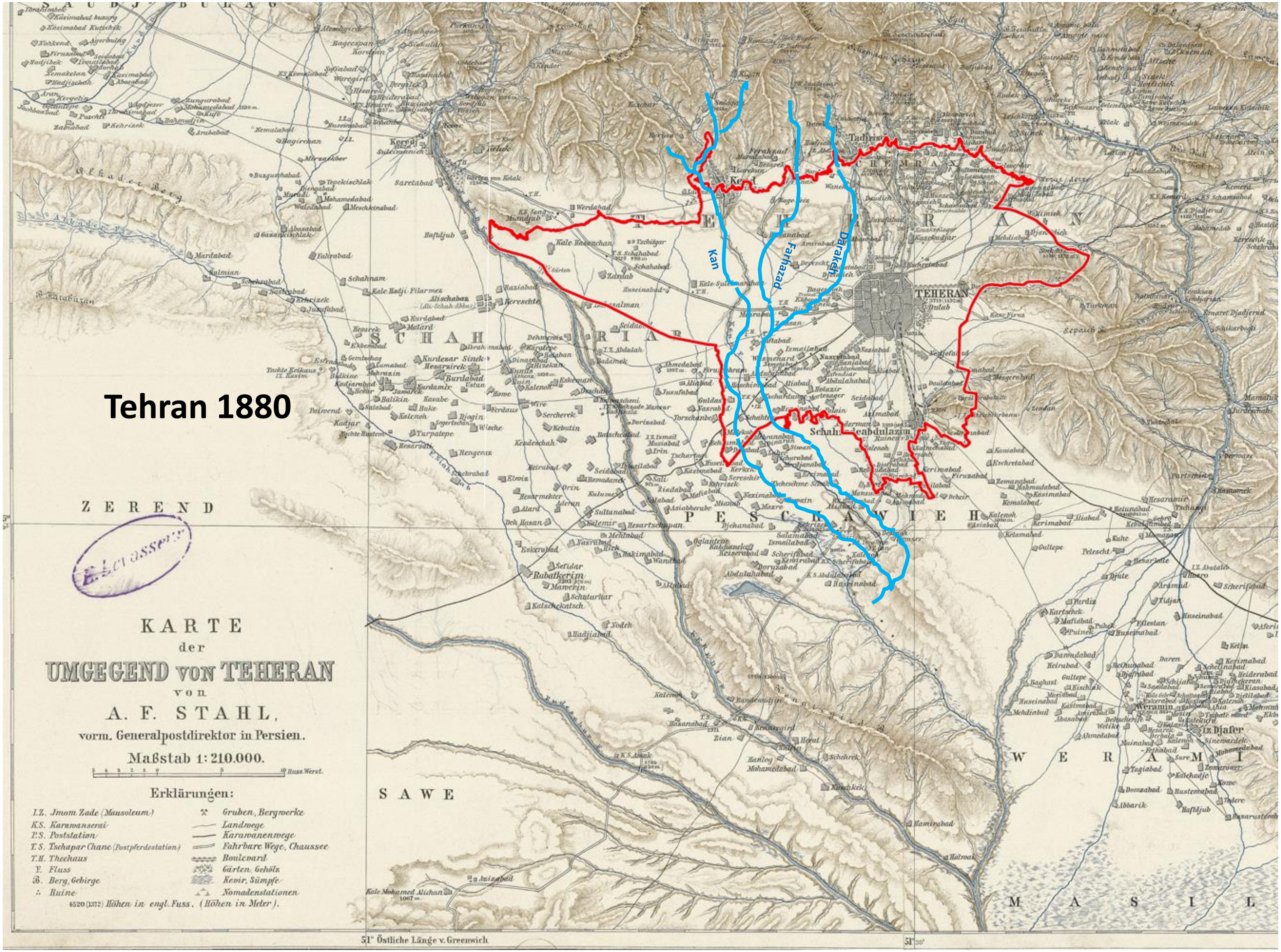
Scientific Publication by Region (2012)

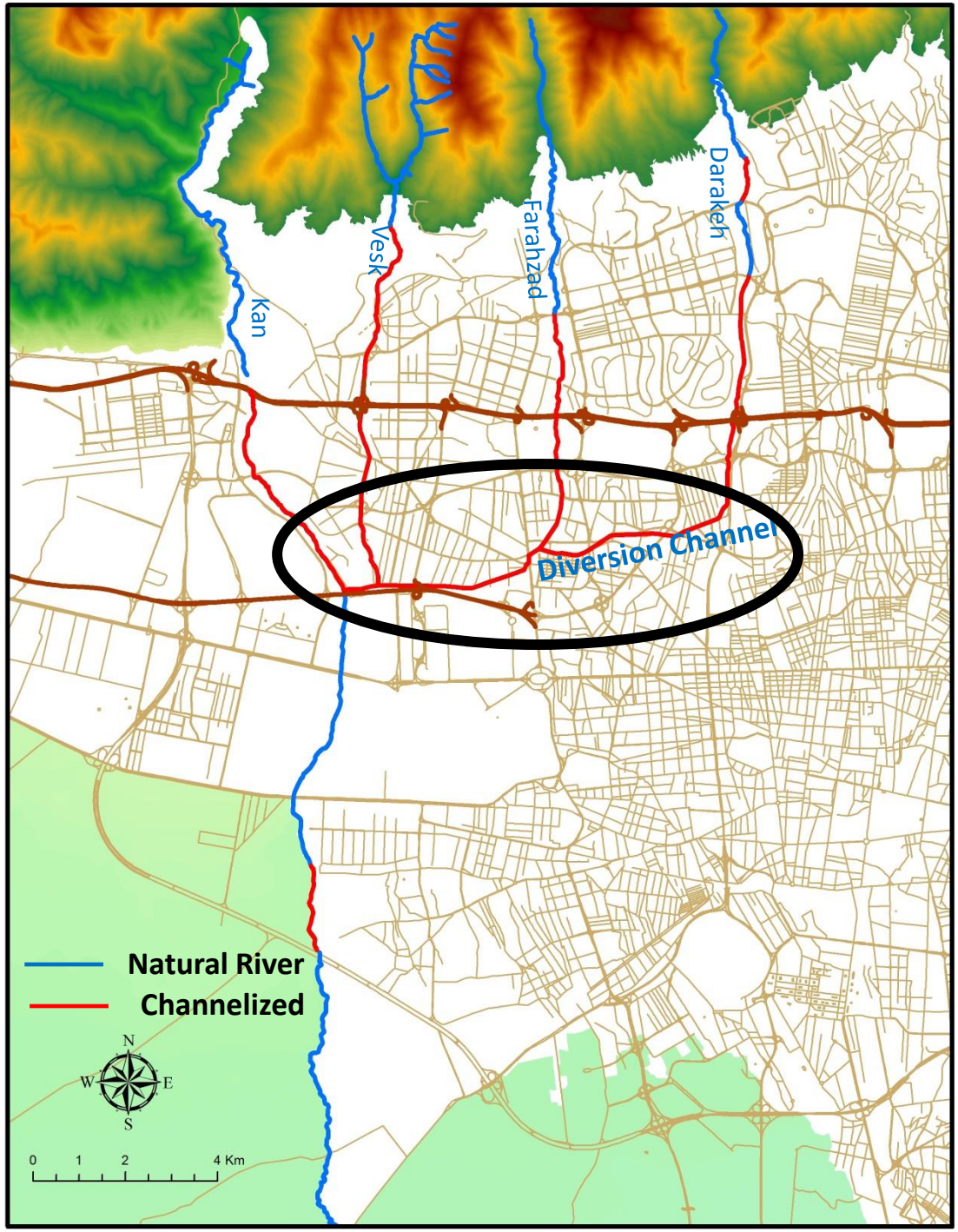
Source: the Nature (Thomson Reuters/Essential Science Indicators)



Nature-oriented River Restoration



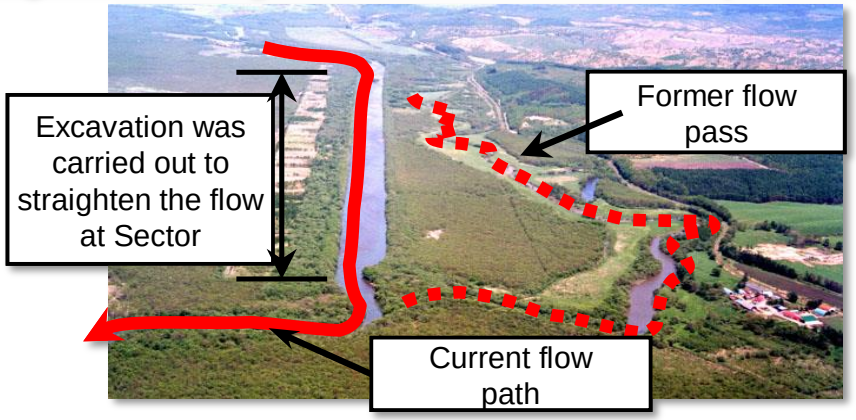

Tehran 1880
Kan
Farhazad
Darakeh
TEHERAN
SCHAH RIAR
PESCHAWIEH
WERAMI
ZEREND
SAWE
KARTE
der
UMGEGEND von TEHERAN
von
A. F. STAHL,
vorm. Generalpostdirektor in Persien.
Maßstab 1:210.000.
Erklärungen:
I.Z. Jmom Zade (Mausoleum)
K.S. Karawanserai
P.S. Poststation
T.S. Tschapar Chane (Postpferdestation)
T.H. Theehaus
F. Fluss
B. Berg, Gebirge
Ruine
Gruben, Bergwerke
Landwege
Karawanenwege
Fahrbare Wege, Chaussee
Boulevard
Gärten, Gehölz
Kewir, Sümpfe
Nomadenstationen
4520 (1372) Höhen in engl. Fuss. (Höhen in Meter).
51° Östliche Länge v. Greenwich


Kan
Vesk
Farahzad
Darakeh
Diversion Channel
Natural River
Channelized
N
W
E
S
0
1
2
4 Km

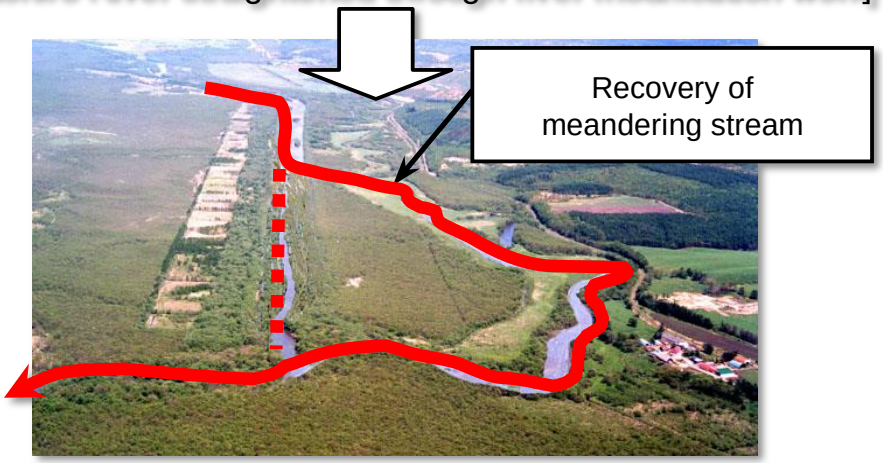
Recovery of nature

A project intended for the maintenance of river environment is conducted by recovering the nature of the “river system” from the basin-wide perspective. The nature’s resilience to recover is vitalized, with as little human intervention as possible.

Recovering meandering stream of Kushiro River (Hokkaido Prefecture)



[Kushiro River straightened through river modification work]



Paradigm Shift

China
Zhuanhe River

Water edge, which was rich in nature (age unknown)

Korea
Yangjae River

Branches of sewers and dried-up streams (1910s)

Japan
Genbei River

River rich in spring water (around 1950)

China
Zhuanhe River

Water edge, which was rich in nature (age unknown)

Mostly reclaimed water's edge (age unknown)

Korea
Yangjae River

Branches of sewers and dried-up streams (1910s)

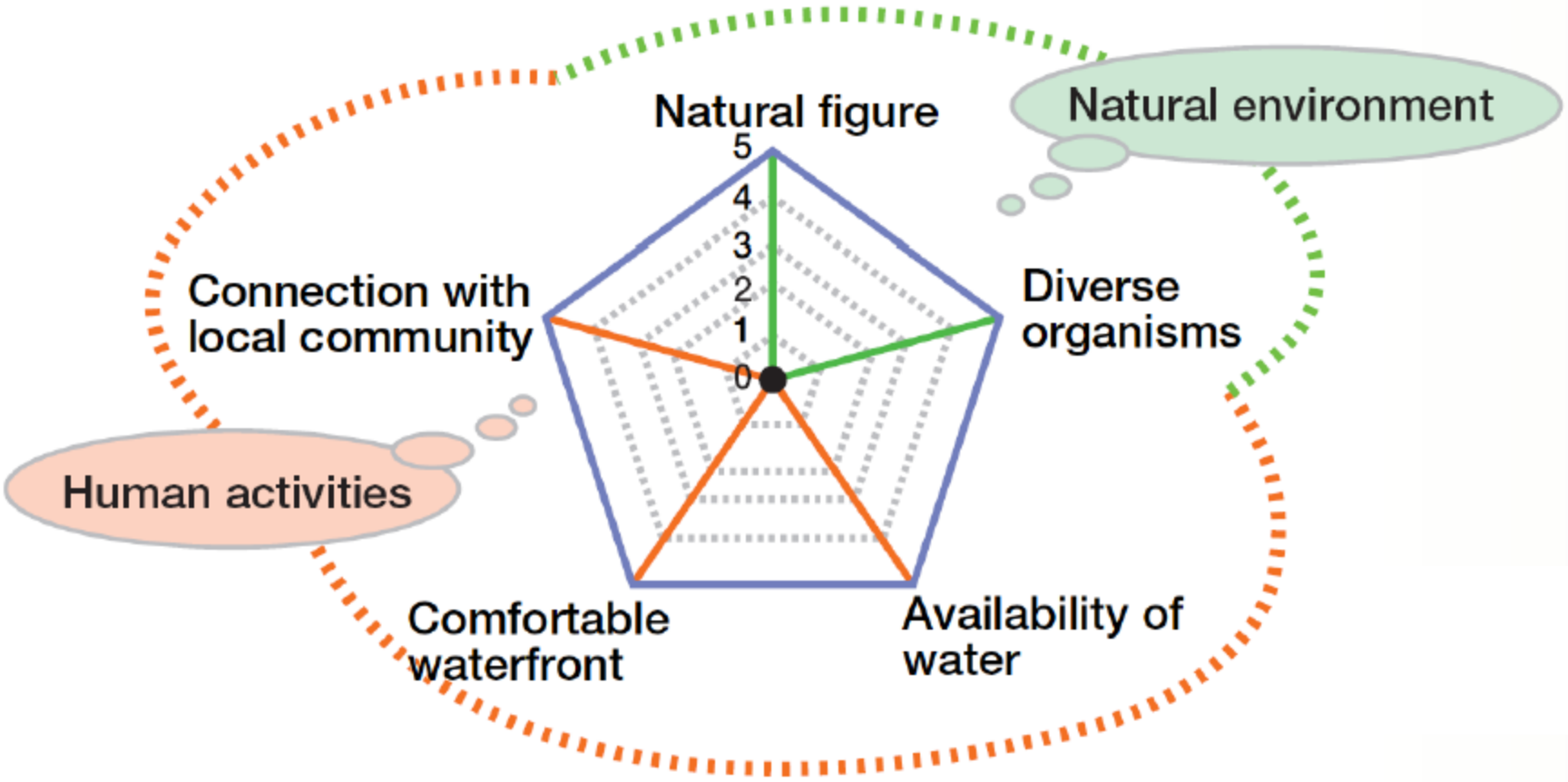
Straightened low-water channels for flood control (around 1980s)

Japan
Genbei River

River rich in spring water (around 1950)

Contaminated river (around 1980)

Nature-Oriented River Restoration




نشست بین المللی تخصصی
از زردکوه تا تالاب گاوخونی
از زردکوه تا تالاب گاوخونی
INTERNATIONAL EXPERT MEETING ON
ZAYANDEH-RUD RIVER SUSTAINABILITY
FROM ZARDKUH MOUNTAIN TO GAVKHONI WETLAND
ISFAHAN,JANUARY,2015 | اصفهان/دیماه ۱۳۹۳
شهرداری اصفهان
Isfahan Municipality
دانشگاه صنعتی اصفهان
Isfahan University of Technology
استانداری اصفهان
Isfahan Governor General

Scientific Resources

European Centre for River Restoration
ECRR

ARRN Asian River Restoration Network
Asian River Restoration Network

European River Restoration Conference

Ver. 2

Reference Guideline
for Restoration
by Eco-Compatible Approach
in River Basin of Asia

"Nature-oriented River Management Guideline III"
Commentary: Technical Standards for River Training of Small to Medium Scale Rivers

Author: Nature-oriented River Management Working Group
Co-editor: Water and Disaster Management Bureau, the Ministry of Land, Infrastructure and Transport
Editor: Technology Research Center for Riverfront Development
Publisher: Japan River Association, 270 pages (A4), 2,500 JPY

Nature-oriented River Restoration

Kan River

Sustainable Development

- Kebar Dam, one of the oldest arch dams in the world (1300) has a height of 26 m, a crest length of 55m and a thickness of only 5m with an arch radius of 38m.
- Its main purpose was flood control to delay in flow discharge larger than 10-year in return period and save water for dry period.

River Channelization vs River Restoration

Unsustainable Approach

- Single Objective
- Only Engineers
- Structural Measures
- River-scale
- Short-time Scale
- Limited responsibility

New Approach

- Multi-objectives
- Multi-Disciplinary
- Structural and non-structural
- Basin-scale
- Continues action
- Long-term responsibility

Thank you