ARC'13

مؤتمر مؤسسة قطر السنوي للبحوث

QATAR FOUNDATION ANNUAL RESEARCH CONFERENCE

التحديات البحثية الكبرى متعددة القطاعات في دولة قطر

QATAR'S CROSS-CUTTING RESEARCH GRAND CHALLENGES

Social Sciences, Arts and Humanities

طوِّر

Social sciences and sustainability transition in water, energy and environment

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Organized by منظم

مؤسسة قطر Qatar Foundation

إطلاق قدرات الإنسان Unlocking human potential

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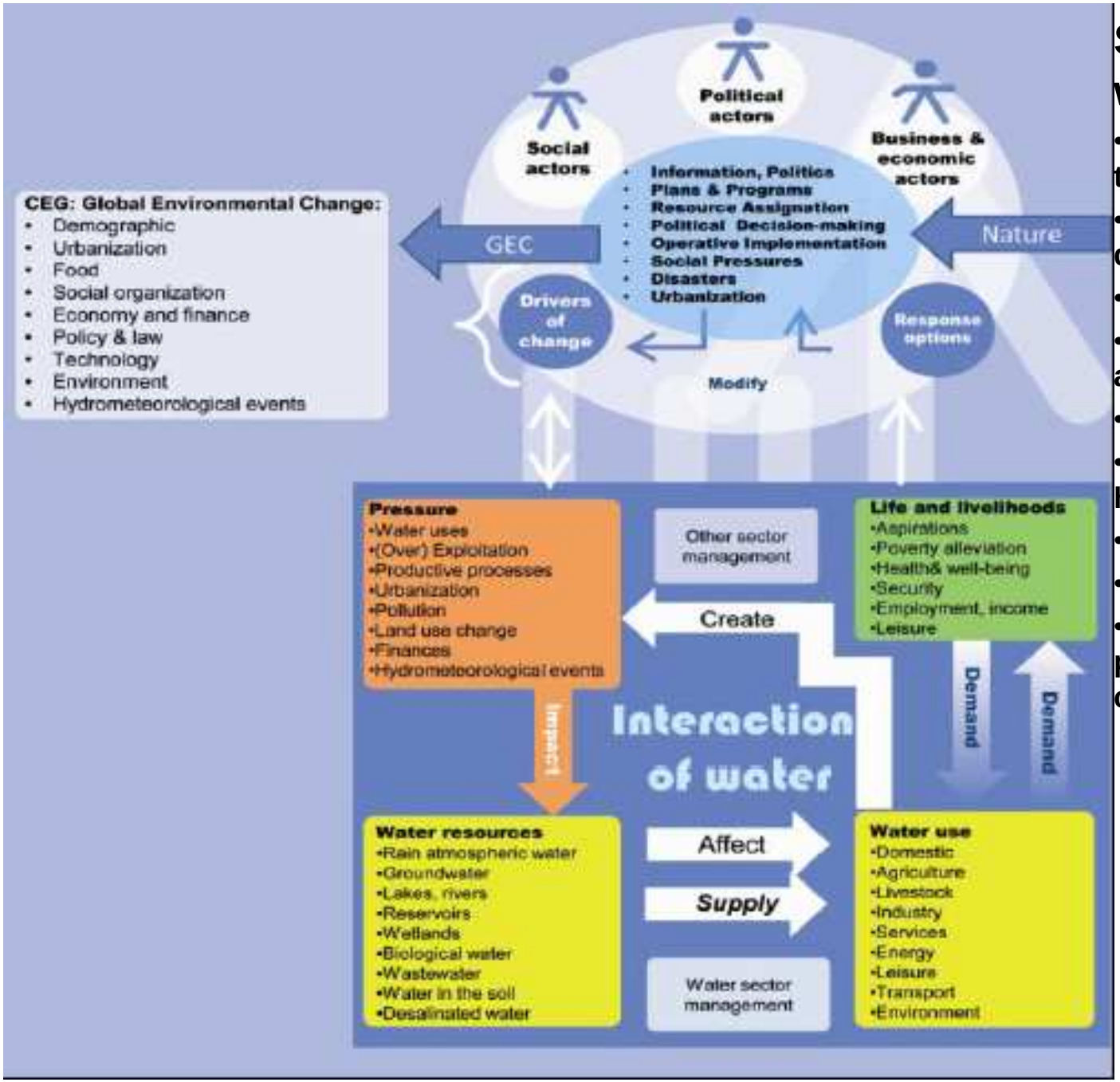
Research questions

How can social sciences support a sustainability transition in water, energy and environment in Qatar?

What are the deadlocks for a sustainability transition globally and in Qatar?

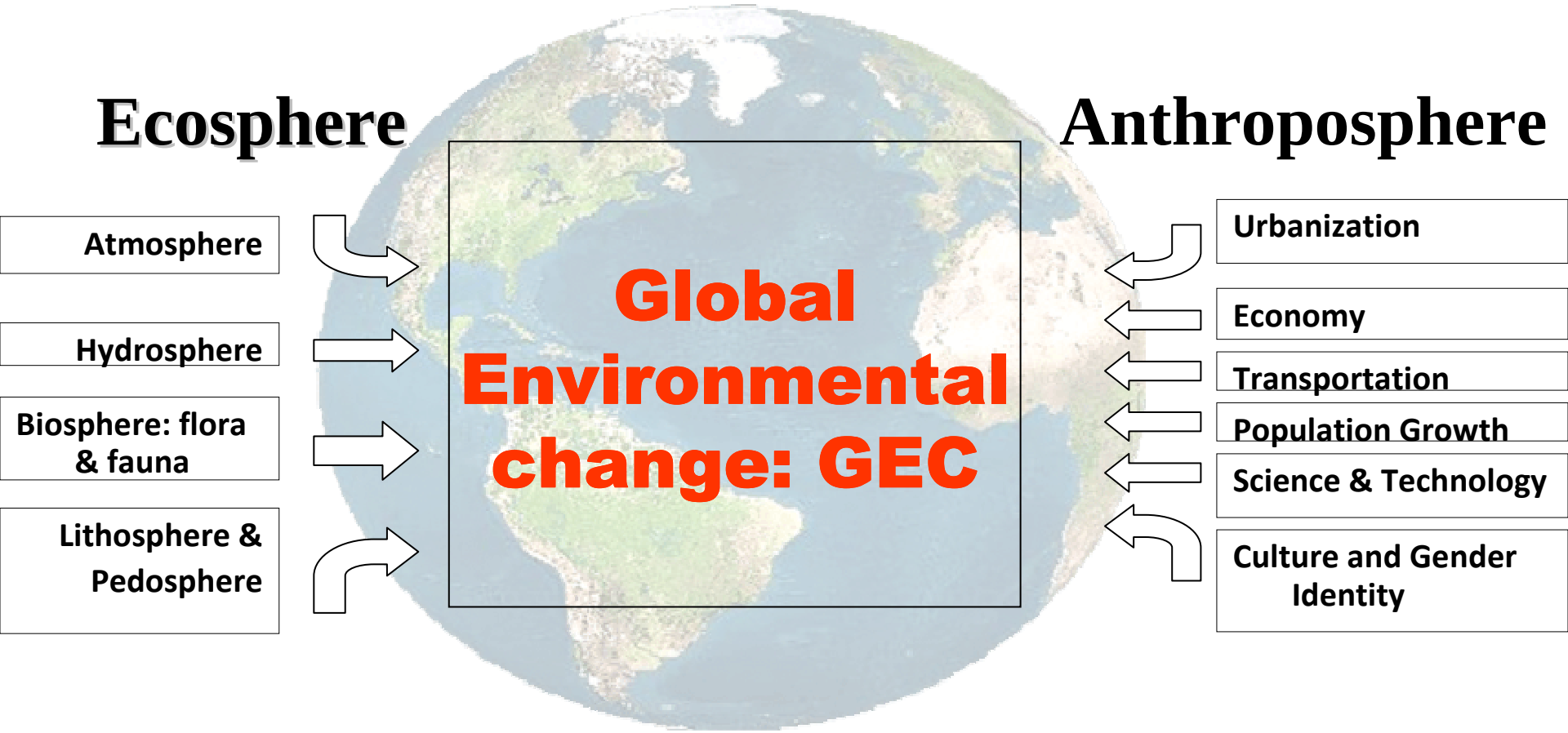


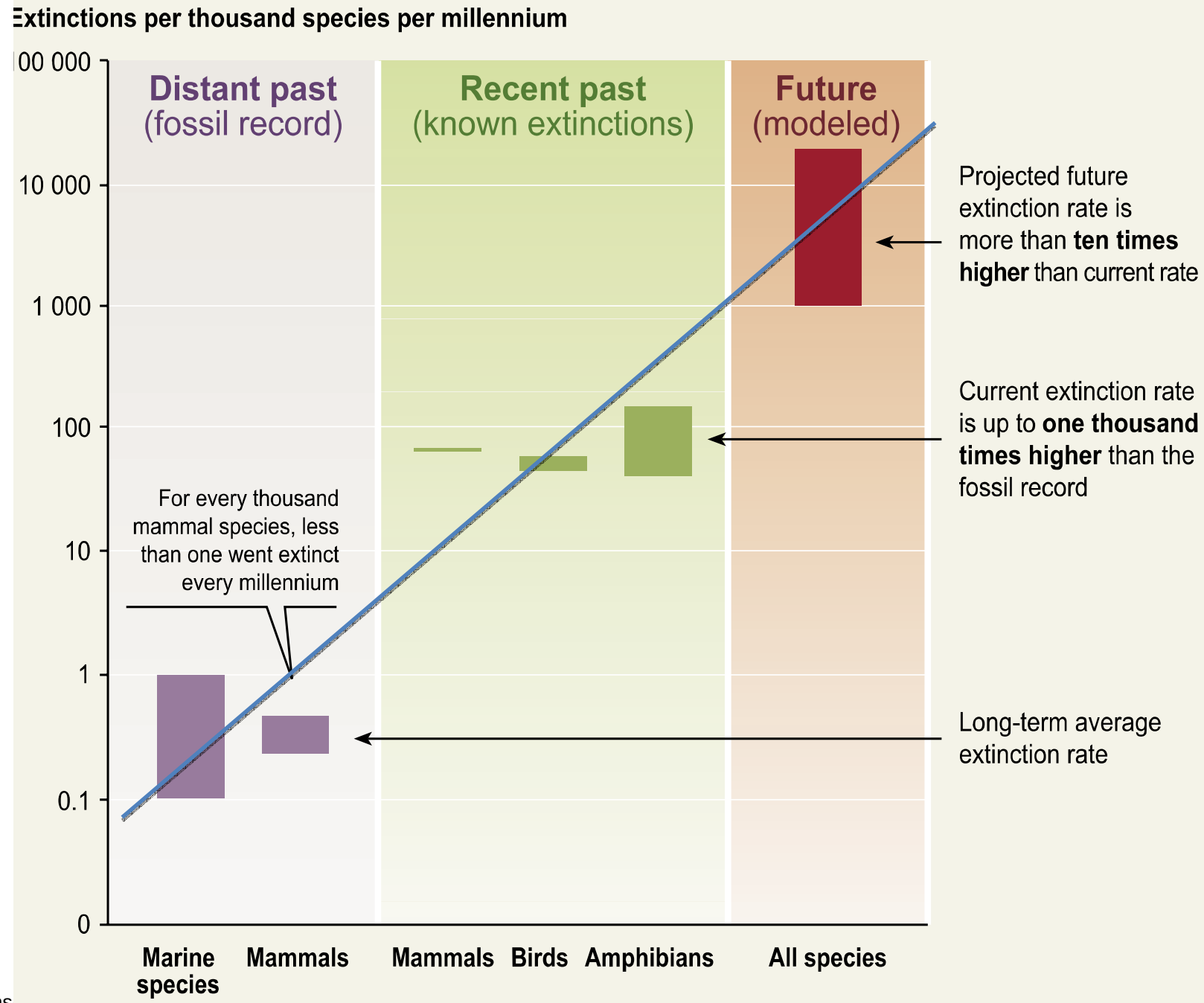
Systemic model of water management:

- Lack of rain water; loss of traditional water harvesting
- Intensive energy use for de-salinization
- Loss of biological water
- Loss of water in the soil and atmosphere
- Population growth
- New hygienic demands for health and wellbeing
- CC variability & impacts
- GEC and urbanization
- New plans, laws and programs to deal with changing situation

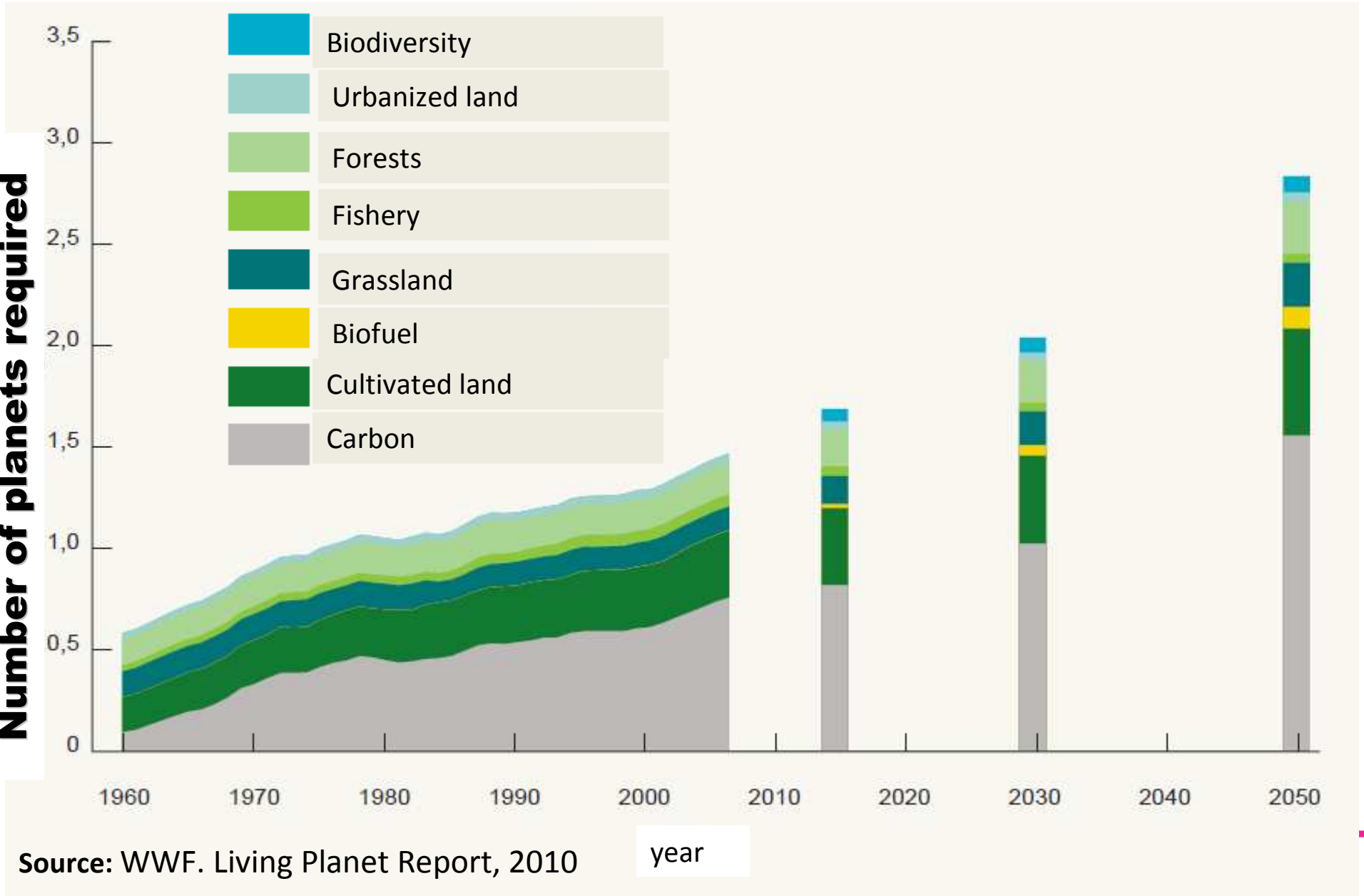
Source: Adapted by Oswald Spring from GWP, 2010: 4

From the Holocene to the Antropocene: in only 5 decades 4 billion of Earth history are changed



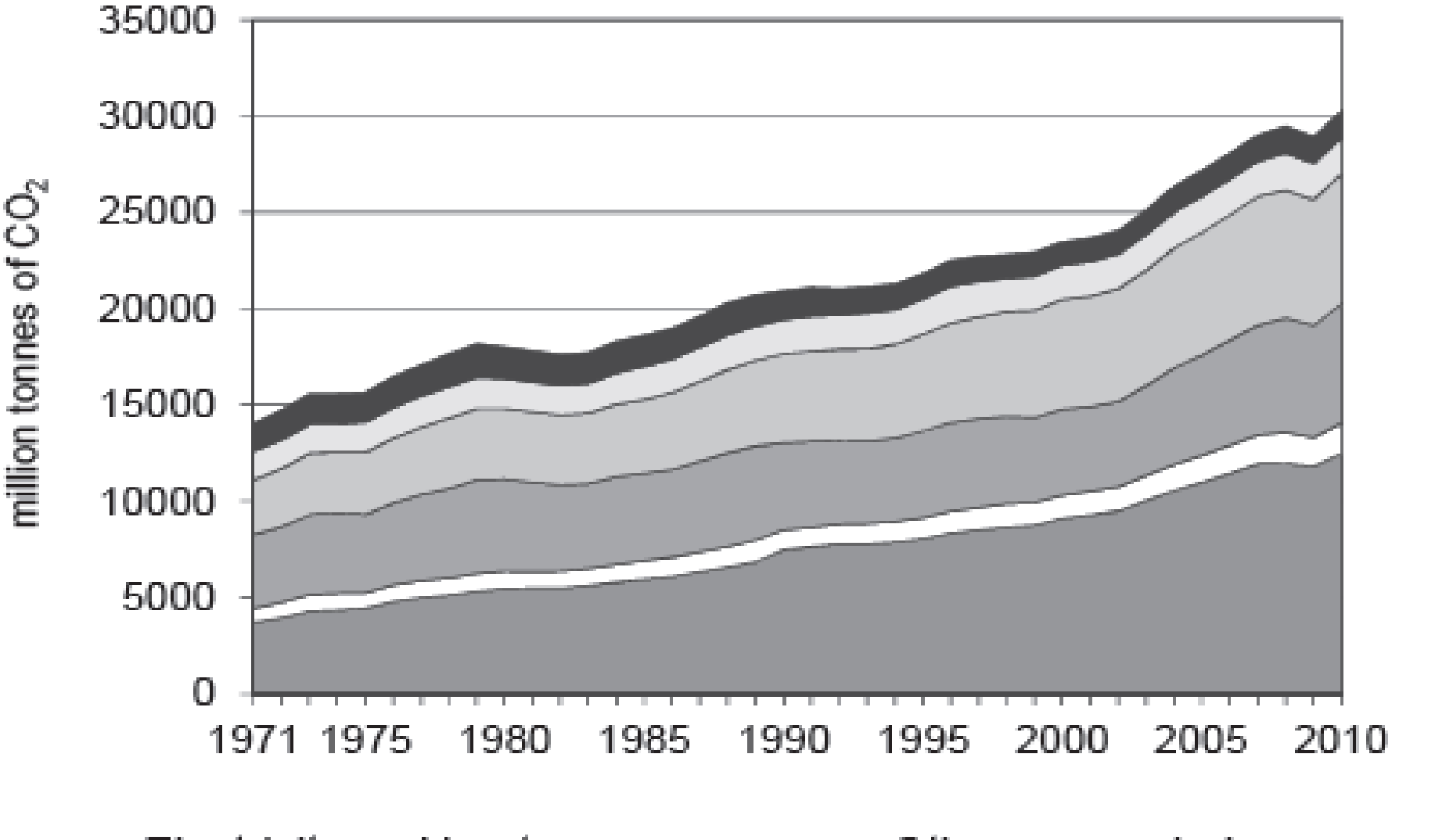

Extinctions per thousand species per millennium
00 000
10 000
1 000
100
10
1
0.1
0
Distant past
(fossil record)
Recent past
(known extinctions)
Future
(modeled)
For every thousand mammal species, less than one went extinct every millennium
Projected future extinction rate is more than ten times higher than current rate
Current extinction rate is up to one thousand times higher than the fossil record
Long-term average extinction rate
Marine species
Mammals
Mammals
Birds
Amphibians
All species
Source: Millennium Ecosystem Assessment

Projections of anthropogenic impacts on the planet



Source: WWF. Living Planet Report, 2010

Emissions by sector worldwide



IEA, 2012: 124

Population growth and growth rate in Qatar

Year	1904	1970	1986	1997	2004	2010	2013
Population	27,000	111,113	369,079	533,023	722,029	1,699,435	1,903,447
Growth rate %	-	2.17	7.79	3.2	5.19	14.76	3.85

Energy and wellbeing in Qatar

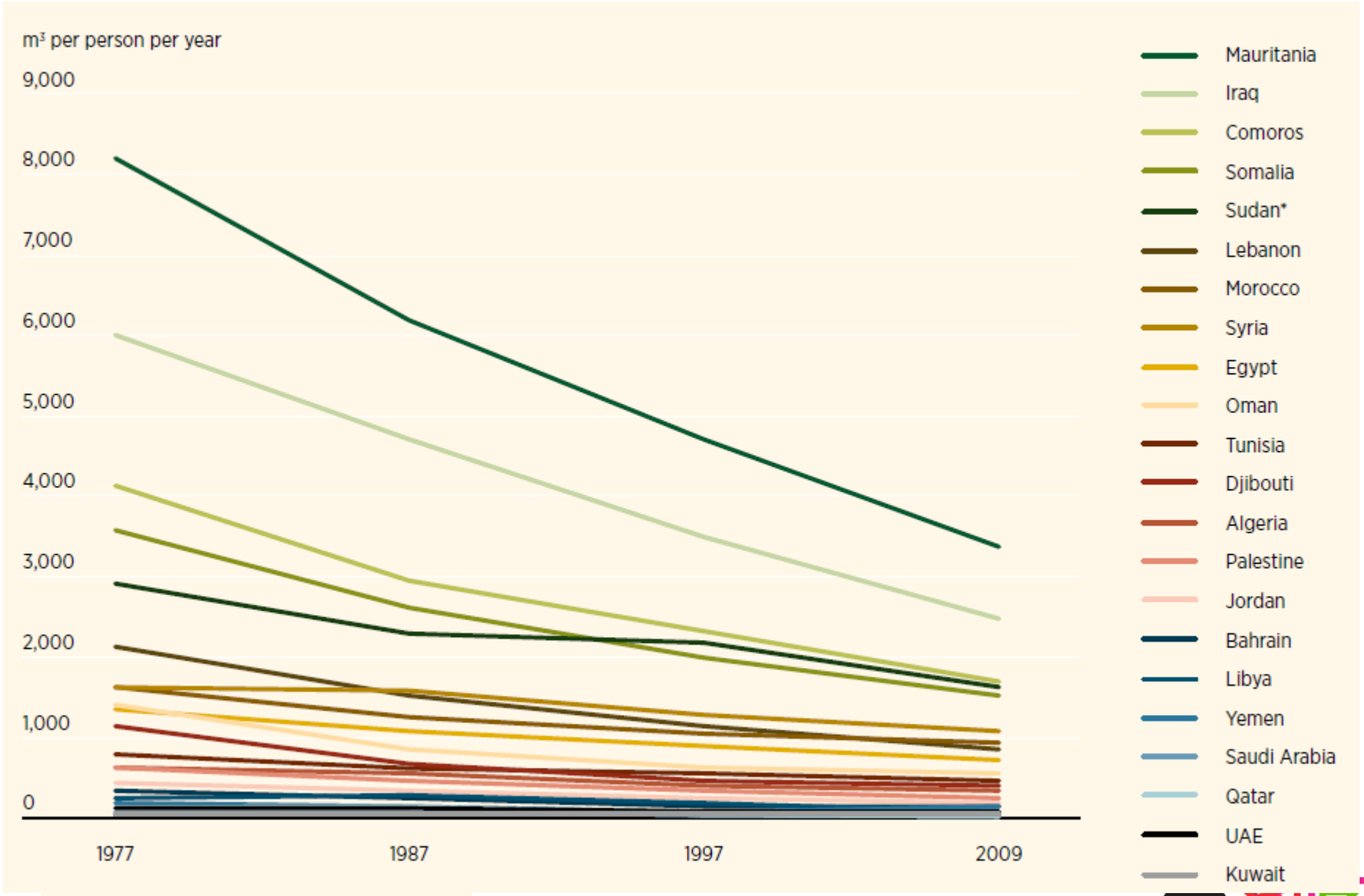
	1971	1975	1980	1985	1990	1995	2000	2005	2008	2009	2010	% change 1990-2010
CO_2 mio t	2.2	4.9	7.7	12.1	14.1	18.7	23.7	37.6	49.8	56.4	64.9	361.7
Oil,CO_2 mio t	0.3	0.7	1.4	1.6	1.9	2.4	2.8	7.8	9.9	11.5	11.6	510.1
Gas, CO_2 mio t	1.9	4.2	6.3	10.5	12.2	16.2	20.9	29.7	39.9	44.9	53.3	338.5
Tot. en. petaj.	39	87	140	227	258	331	436	709	900	983	1266	389.9
GDP bio US$	15.1	15.3	17.8	15.0	14.8	16.4	28.9	43.0	81.2	88.2	102.6	594.0
PPP bio US$	20.0	20.3	23.6	19.9	19.6	21.7	38.3	57.1	107.6	117.0	136.0	594.0
CO_2/pers,kg	18.87	30.05	34.67	32.9	29.66	37.25	40.05	45.74	35.65	35.32	36.9	24.4

Total use of energy in Qatar/cap.

CO_2/Pers.	Total CO2	Electricity	Other energy industry own use	Manufacturing industries & construction	Transport on roads	Residential
kg/cap.	36,900	7,904	11,557	12,062	5,224	153

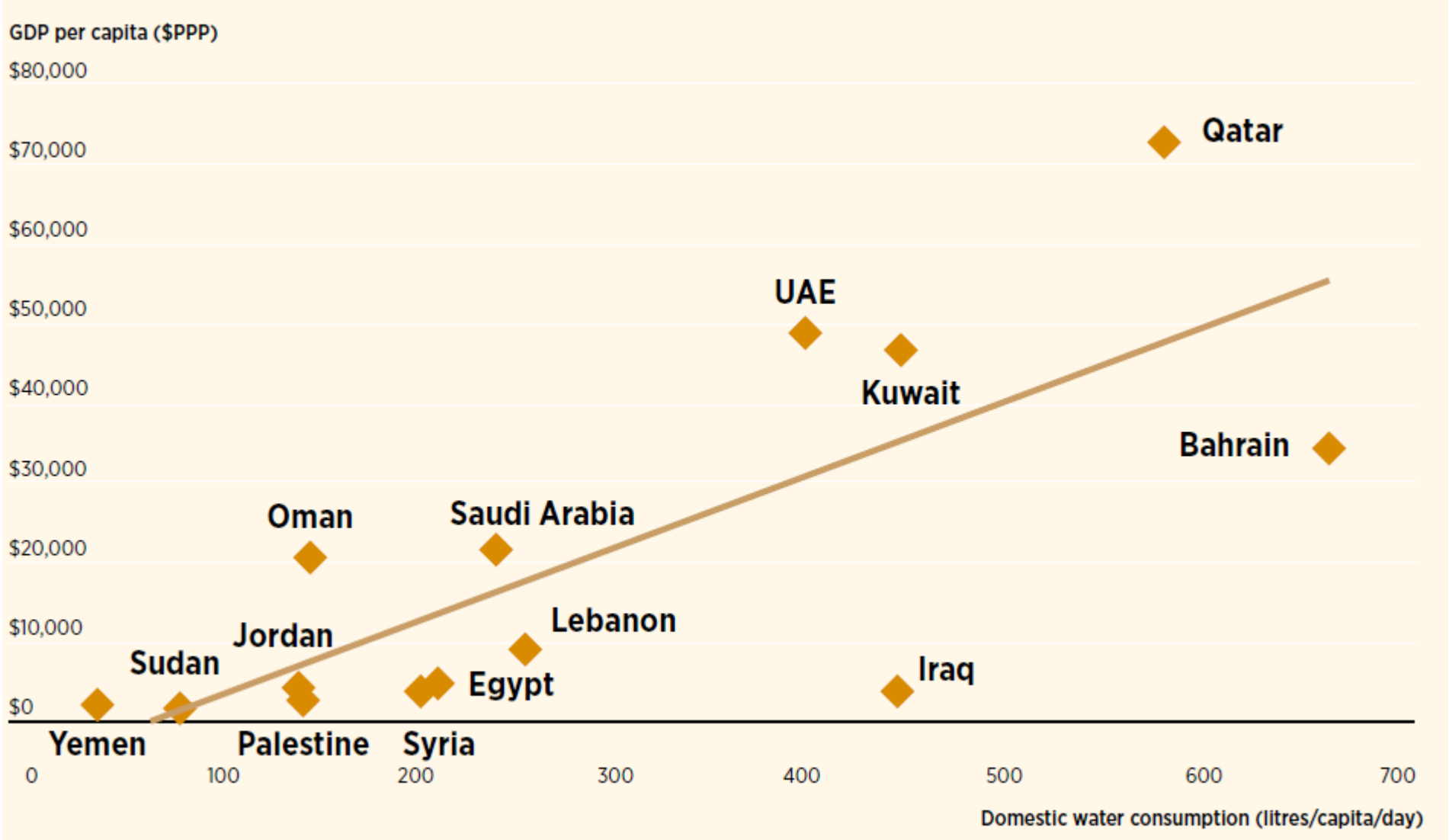
IEA, 2012: 19 - 101 and 104

Decline of renewable water resources in Arabic countries



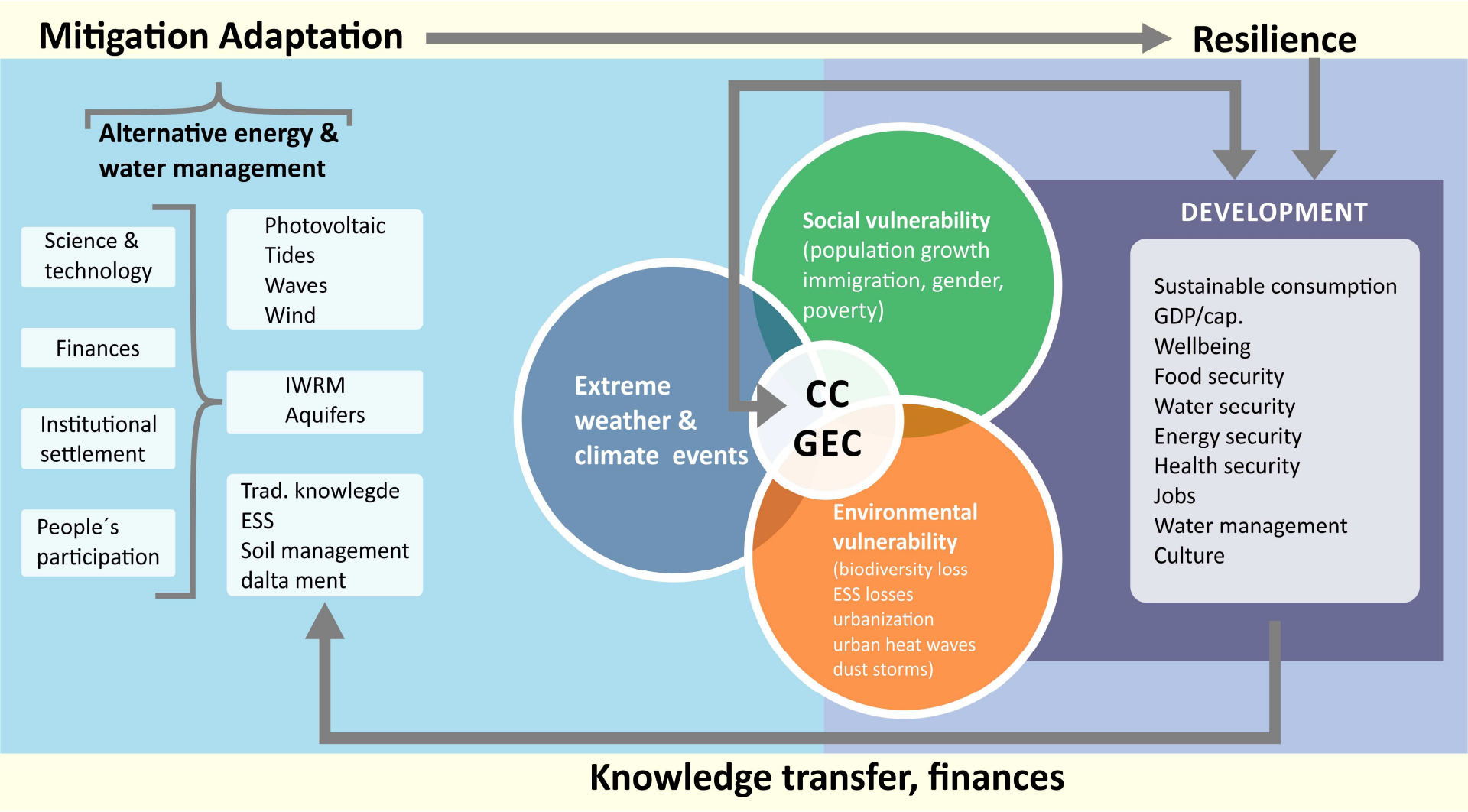
Source: FAO AQUASTAT

Water consumption and GDP in Middle East



Source: ESCWA (2009c, p. 7).

Transition to sustainability




Gracias
Thank You
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