Hans Günter Brauch
Free University of Berlin & AFES-PRESS, Mosbach, Germany

Urbanization and Natural Disasters in the Mediterranean

Population Growth and Climate Change in the 21st Century

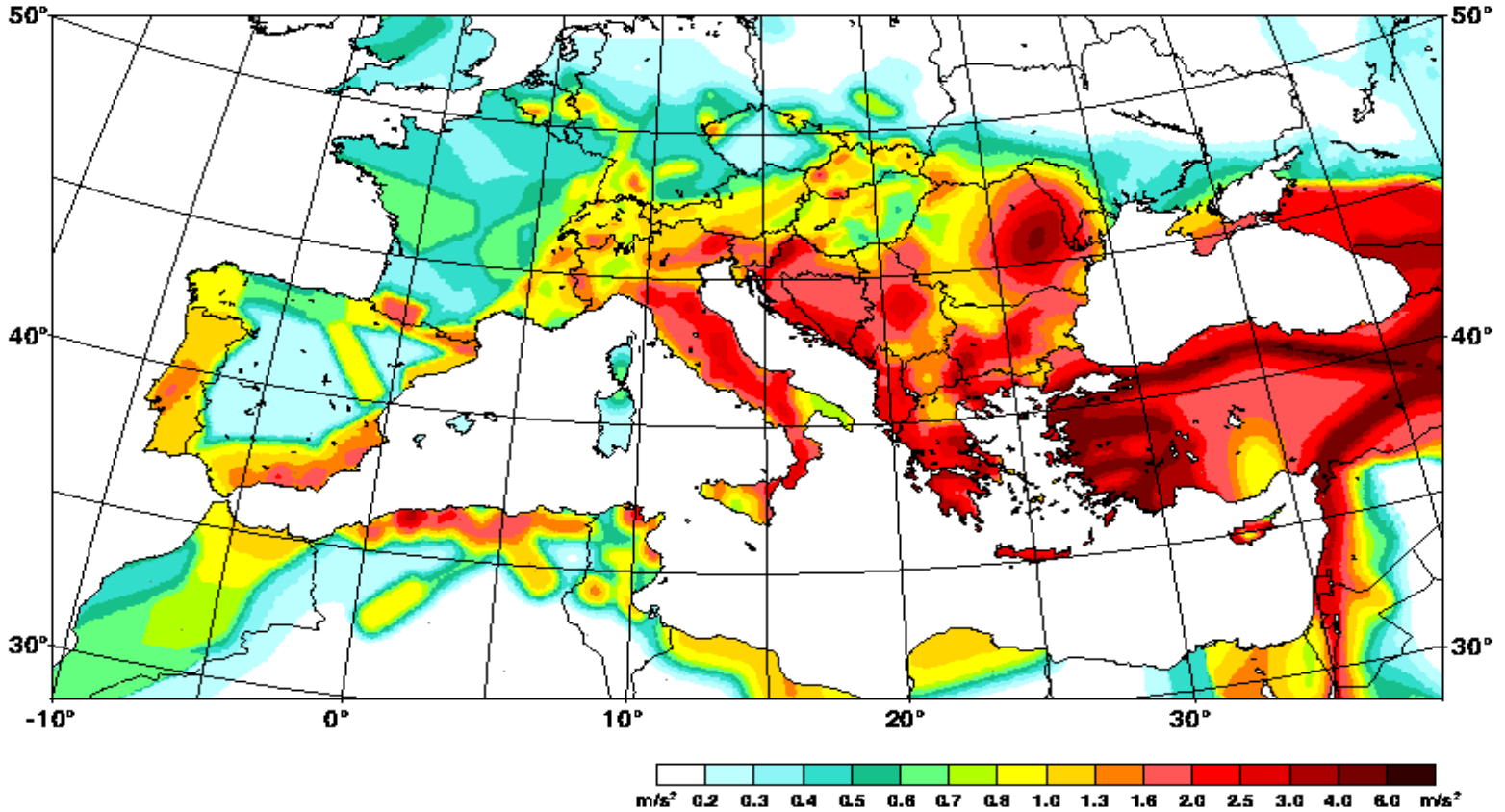
Case of Izmit, Turkey (1999) & Algiers, Algeria (2001)

- Rising Vulnerability to Disasters due to Urbanization in the Med.
- Model: Global Challenges, Environmental Stress & Outcomes
- Population Growth & Urbanization in the Med. (1850- 2050)
- Analysis of the Trends in Disasters in the Mediterranean
- Vulnerabilities of Cities to Disasters: Izmit and Algiers
- Conclusions & Lessons: Urbanization & Disaster Preparedness

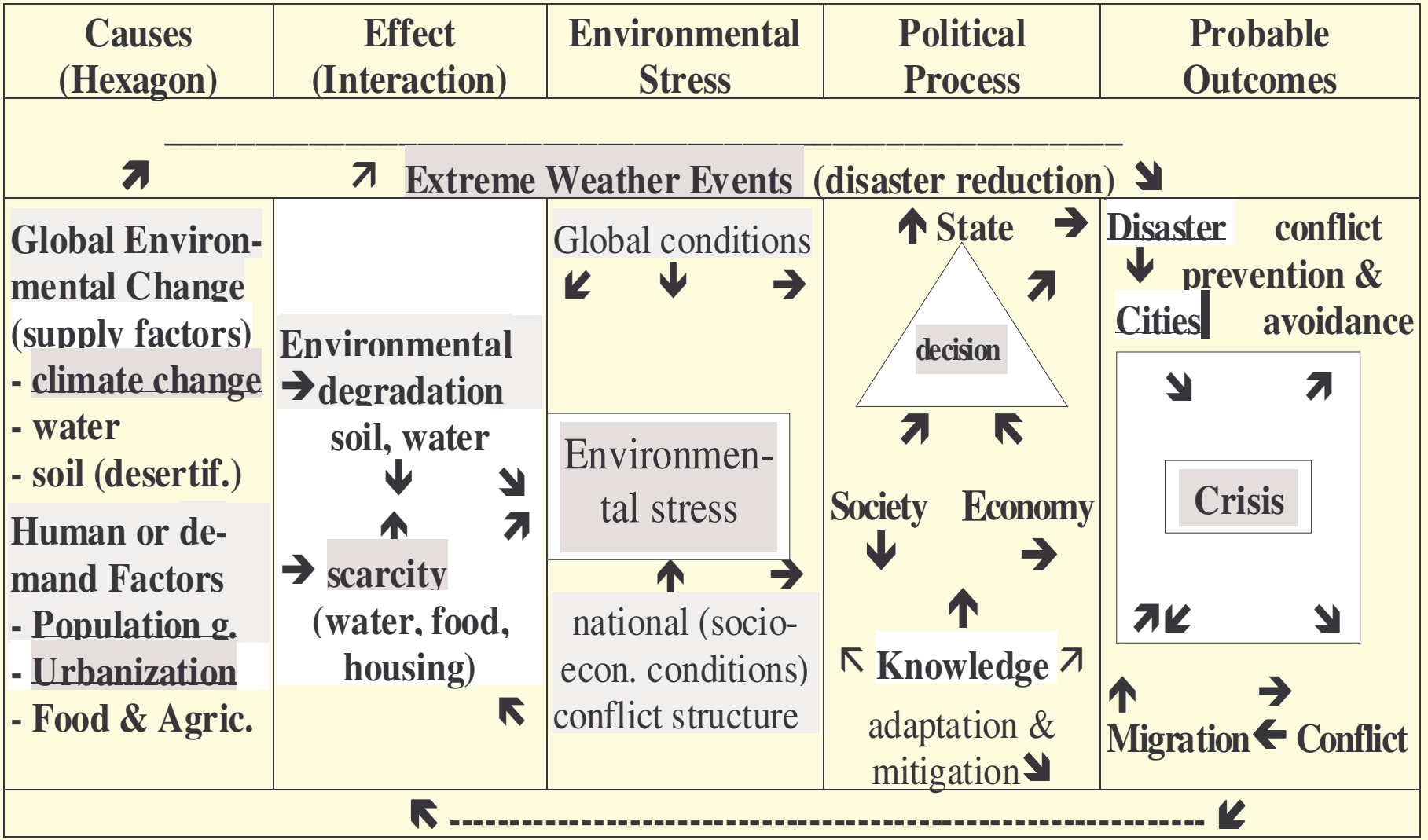
Rising Vulnerability to Disasters due to Urbanization in Med.

- **In 20th century: Rise in nat. disasters, fatalities, affected, losses but fatalities differed in South European EU countries & in MENA.**
- **In 21st Century: IPCC (TAR): Rise in Extreme Weather Events**
- ■ **Increasing exposure to hydrometeorological hazards** (climate change) ➔ ***environmental vulnerability*** **of MENA cities** countries & **urbanization (population growth) & poverty** ➔ ***social vulnerability***
- ■ **North-South cleavage in vulnerability to disasters may increase**:
  - **Impact** of extreme weather events will increase in Med. mega-cities.
- · **Urban vulnerability** will rise ➔ population growth & urbanization
- **Dual vulnerability will rise in megacities without poverty eradication, disaster preparedness, & improved urban building standards**.

Figure: Seismicity in Mediterranean Region



Model: Global Challenges, Environmental Stress and Outcomes



Population Growth & Urbanization in the Med. (1850- 2050)

Trends in Population Growth (1850-2050) in million						
			1850	1900	1950	2000	2050
Southern Europe			83.0	103.5	132.9	177.3	154.1
North Africa			13.1	22.3	44.1	142.8	239.4
Eastern Med.&Turkey			12.45	16.05	29.2	89.5	173.9
Trends in Urbanization (1950-2030) in %, Growth of Urban Centres							
			1950	1980	2000	2010	2030
North Africa (5)			24.7	40.4	48.9	53.4	63.3
Western Asia(6)			26.7	51.7	64.7	67.2	72.4
	1950	1960	1975	1990	2000	2010	2015
Istanbul	1.08	1.74	3.60	6.54	8.96	10.72	11.36
Algiers	0.50	0.81	1.57	1.91	2.76	3.74	4.14

Analysis of the Trends in Disasters in the Mediterranean

People reported killed & affected by natural disasters, 1975 – 2001

	Total		Earthquake		Flood		Storm	
	E	Killed	E	Killed	E	Killed	E	Killed
S.Europe	249	8,889	33	6,007	71	837	60	469
Balkans	50	562	11	187	12	108	0	0
W. Asia	95	27,613	23	26,087	24	505	8	70
N. Africa	82	6,606	10	3,452	38	2,924	6	69
Total	485	43,729	79	35,735	145	4,374	76	608

Source: CRED database: how representative are reported events?

Role of Earthquakes more important than global trends (Munich Re)

Fatalities of Earthquakes: ca. 50% in 1999 in Izmit (Turkey)

Floods: More envents & damages in S.Europe, more fatalities in N.A.

Vulnerabilities of Cities to Disasters: Izmit and Algiers

Earthquake in Izmit, Turkey, 17 August 1999

- **Turkey 23 (of 63): earthquakes killed: 26,087, affected: 2,377,128**
- **Izmit: 17,200 died, 321,000 jobs, 600,000 homel., econ. loss (US$ 12bn),**
- **ISDR Report (2000) high vulnerability due to: population growth & urbanization; lack of existing building regulations, siting of industry**
- **Response: 2 WB loans: US$ 757 million; EIB facil.: € 450 million.**

Flash Flood in Algiers: November 2001

- **Algeria: 36 events, 4,124 fatalities, 1,154,355 affect.,**
  earthquakes: 2,881; floods: 1,201; affect.: earthquakes: 1,001,212
- **9-13 Nov. 2001**: Flash floods in Algiers: 921 deaths (IFRC 2002), and affect. 50,423, UNICEF: 10,000 families; econ. losses: US$ 300 mill.
- **High vulnerability ➔ high fatalities** (population density, poor housing in flood-prone areas, admin. errors, lacking building standards, poor area Bab el Oued).
- **Response: WB loans: US$ 89 million; EIB loan: € 165 million.**

Urbanization & Disaster Preparedness

Conclusions

Hydrometeorological hazards will increase *environm. vulnerability*

Rapid urbanization will increase *social vulnerability* to all hazards, for poor in informal housing, in flood prone areas.

Strategy for MENA: Reduce exposure & vulnerability to hazards

Lessons: Mediterranean Strategy of Disaster Reduction

Mediterranean is divided region among: Europe, Asia & Africa

¨ Actors: Euro-Med. Partnership (EMP), Council of Europe (EURopa), UNESCO, GMES (EU& ESA), scient. inform. net-work (MEDIN)

<u>Mediterranean strategy for disaster reduction</u> (MSDR) by ISDR, Med. Inter-Agency Task Force for Disaster Reduction (MIATF) could link regional strategic activities & efforts of UN, UNESCO, EU, Arab League, IFRC-RCS, insurance industry, to involve all stake-holders incl. IFIs: World Bank, EIB, EU (METAF) & NGOs.

Disaster impact assessment: risk maps, joint training, early warning