Estimating the cost of health adaptation

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Health risks from climate change

We have a systematic approach to health adaptation

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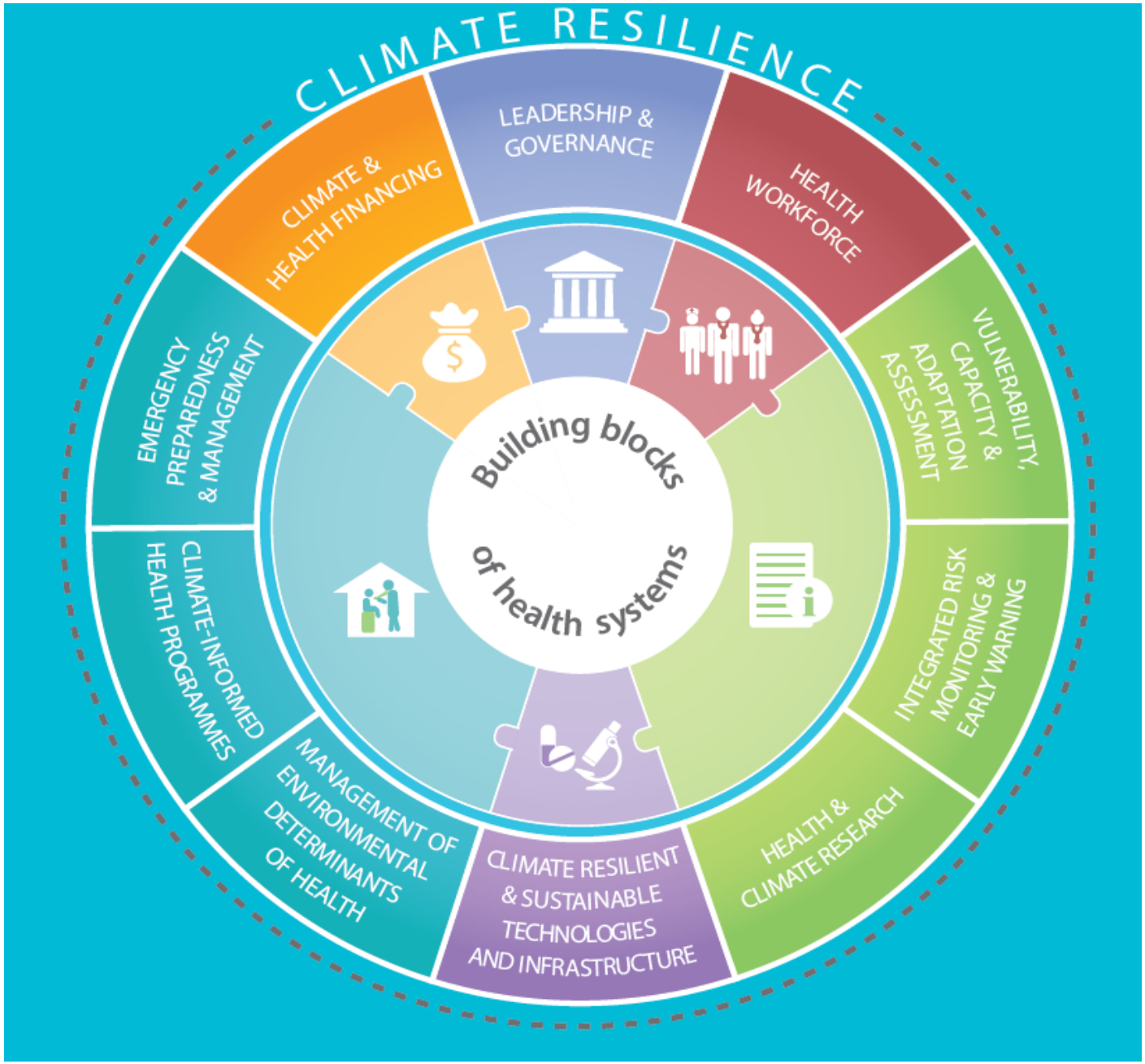
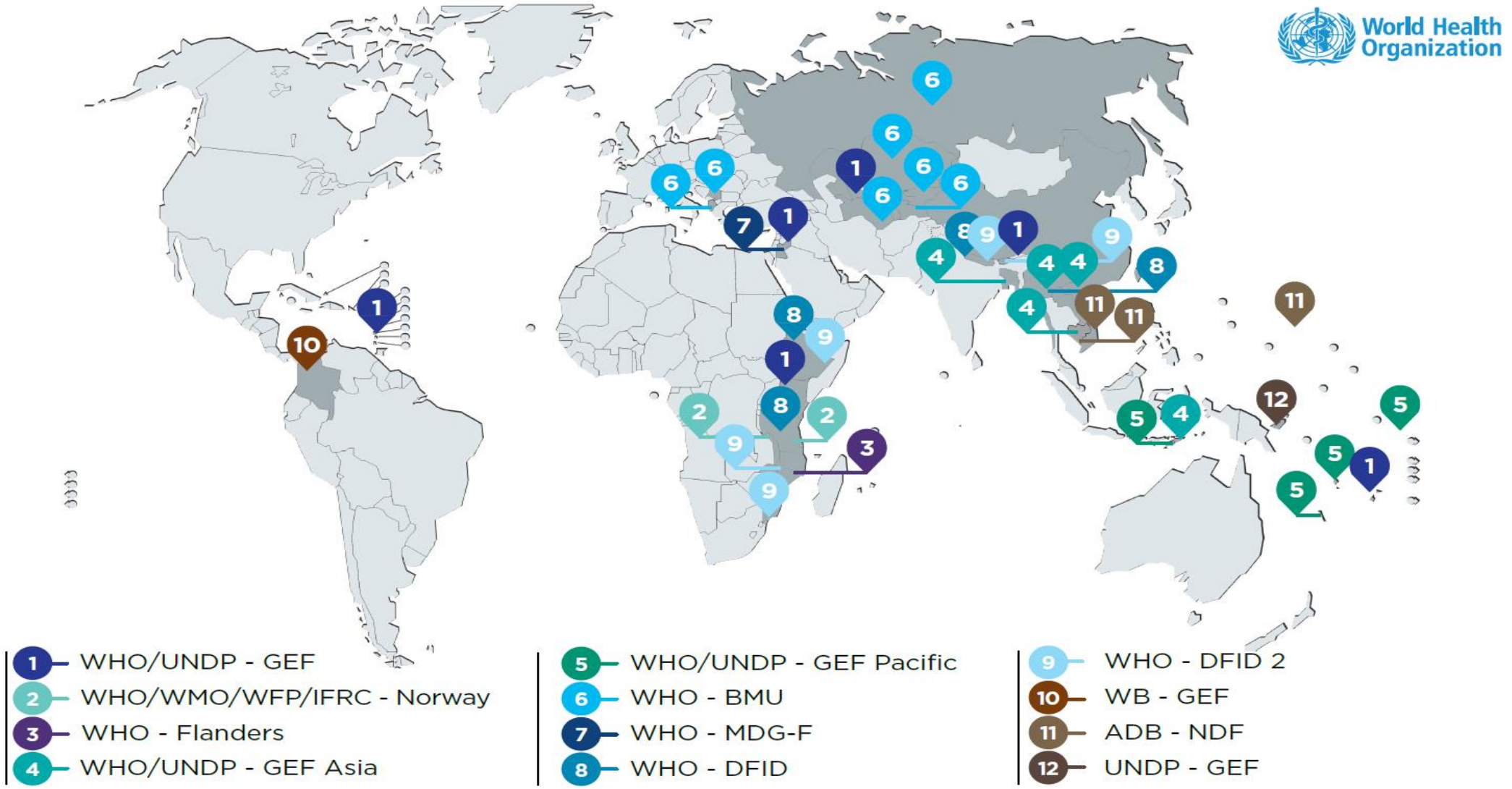


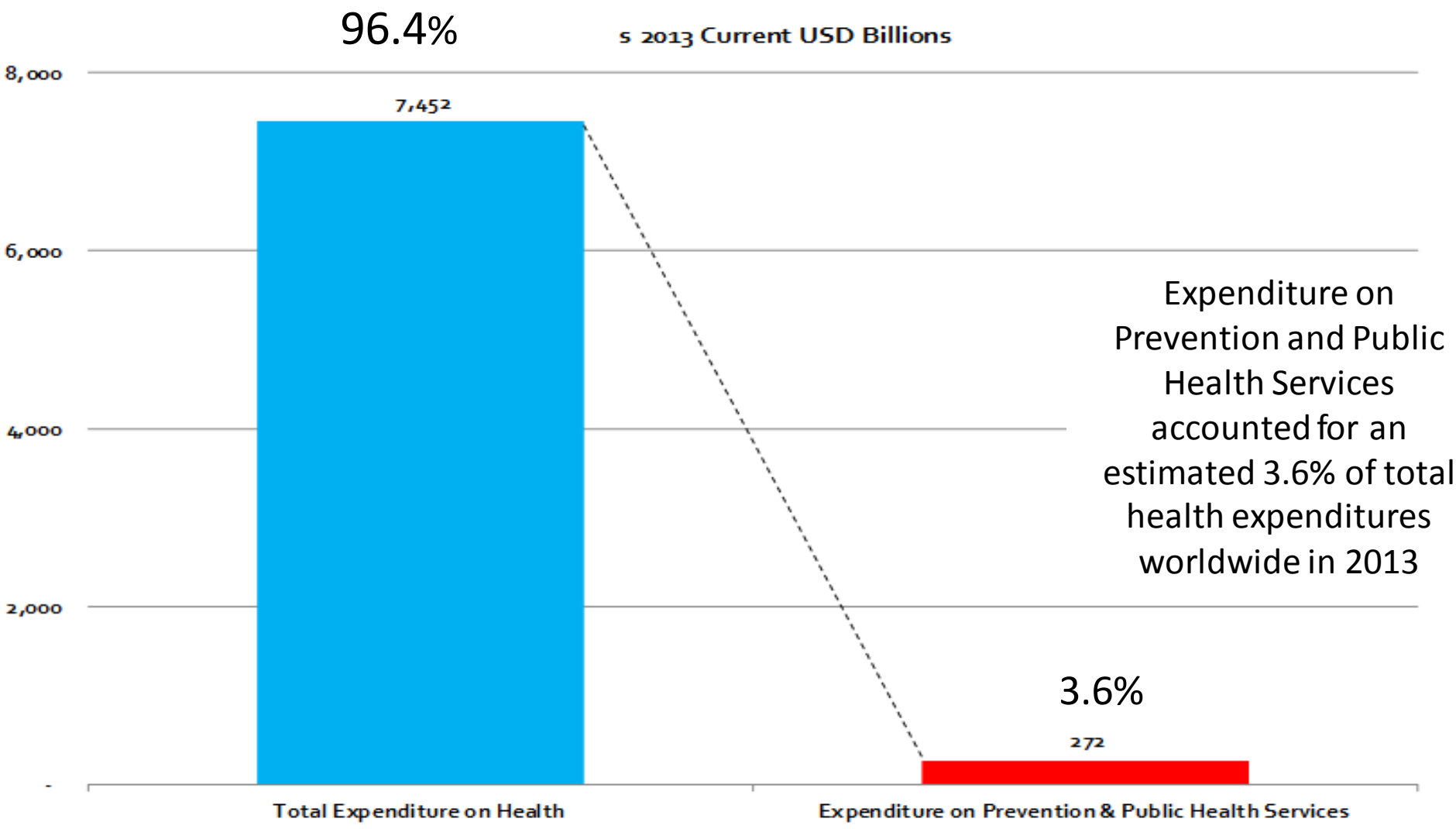
Operational Framework for Building Climate Resilient Health Systems. *WHO, 2018*

There is increasing coverage and experience in climate and health programmes



Approved projects of > US$500,000 per country

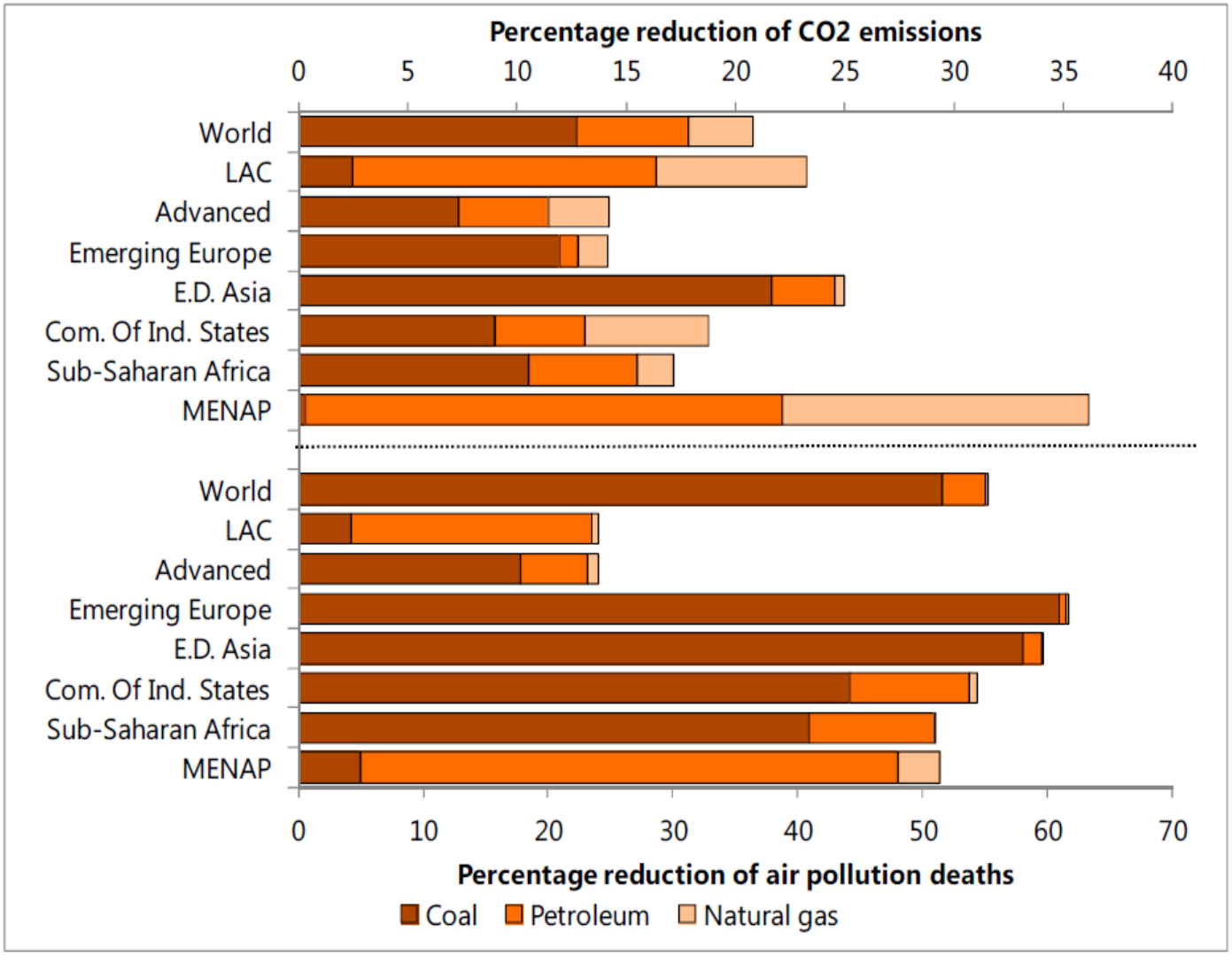
How much is currently invested in prevention?



Expenditure on Prevention and Public Health Services accounted for an estimated 3.6% of total health expenditures worldwide in 2013

Source: WHO GHO, OECD , UK NHS, EIU, PHE Estimates

Health is also important in economics of mitigation



Pricing carbon in line with health impacts would cut ~ 50% of air pollution deaths, ~ 20% of CO_2 emissions, and generate ~ 3% of GDP in tax revenues

IMF, 2015

Effect of placing a price on carbon in line with countries own national interest (IMF, 2015)

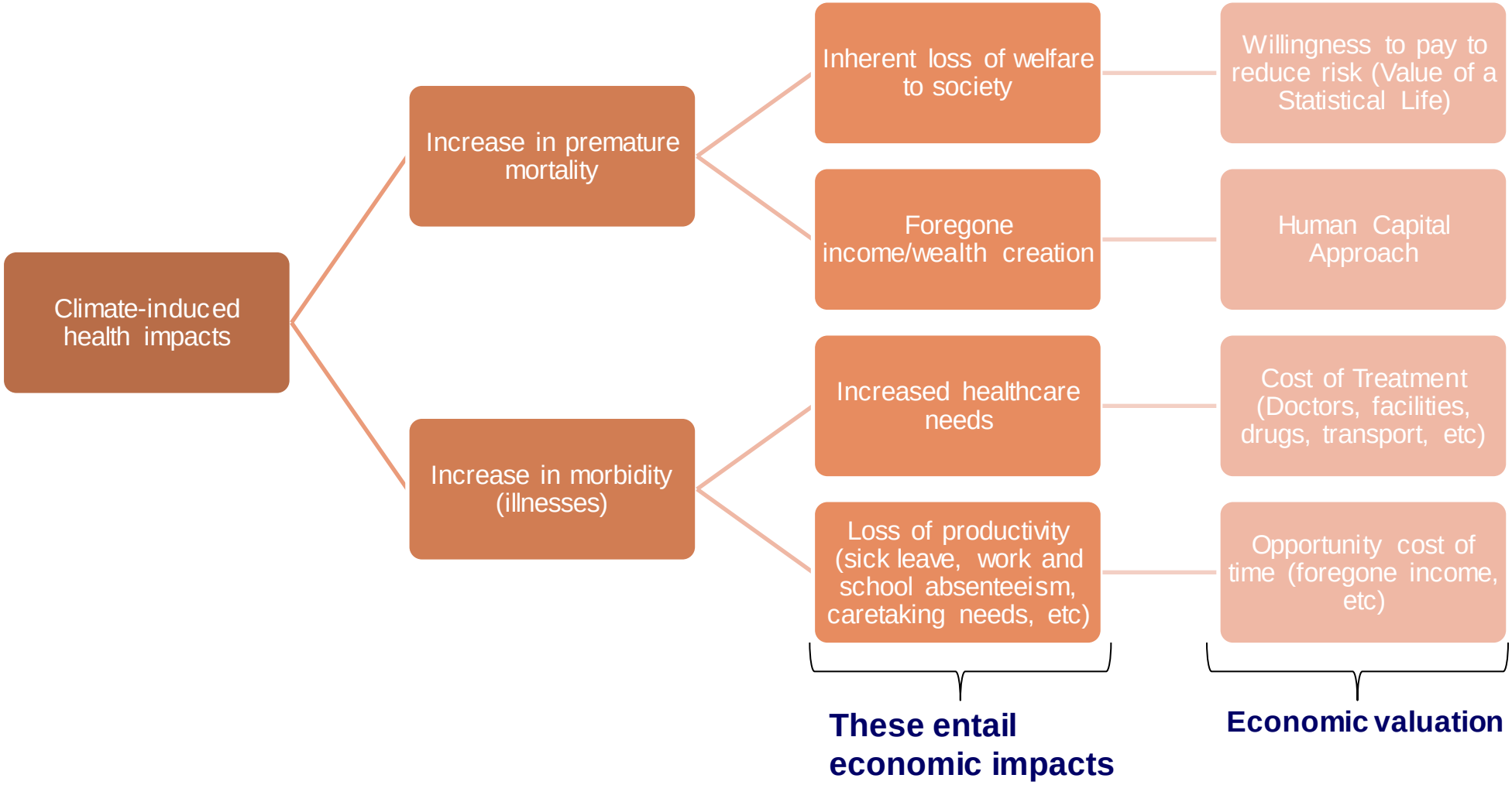
Health system strengthening: Estimation of required resources for health adaptation

Estimated global annual cost of climate change adaptation (US$ billion):

Sector	World Bank (2005 prices)	UNFCCC (2007 prices)
Period or time point	**2010-2050**	**2030**
Health sector	**2.0**	**3.8 - 4.4**
Water supply	13.7	9.0 - 11.0
Agriculture, forestry and fisheries	7.6	14.0
Extreme weather	6.7	-
Total health-related	**30.0**	**26.8 - 29.4**
Total (all)	**89.6**	**56.8 - 193.4**
% health-related	**33.4%**	**13.8 - 47.1%**

All estimates derived by applying unit costs to WHO estimates of health impacts of climate change

Climate change affects health…
… and health effects have economic consequences



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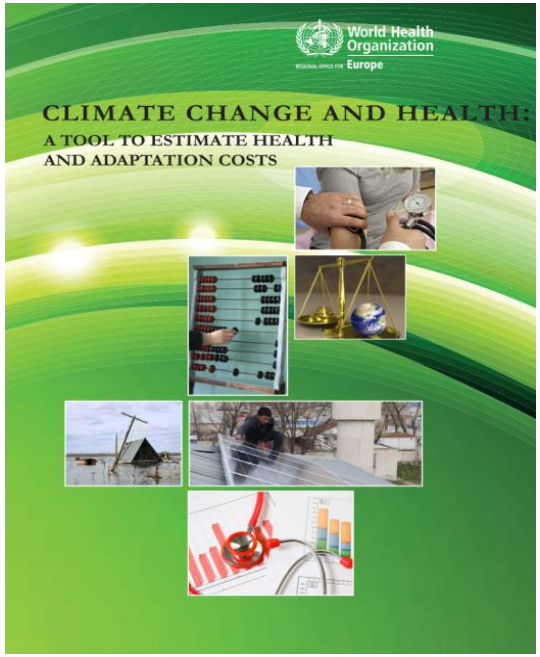
Adaptation planners need to know:

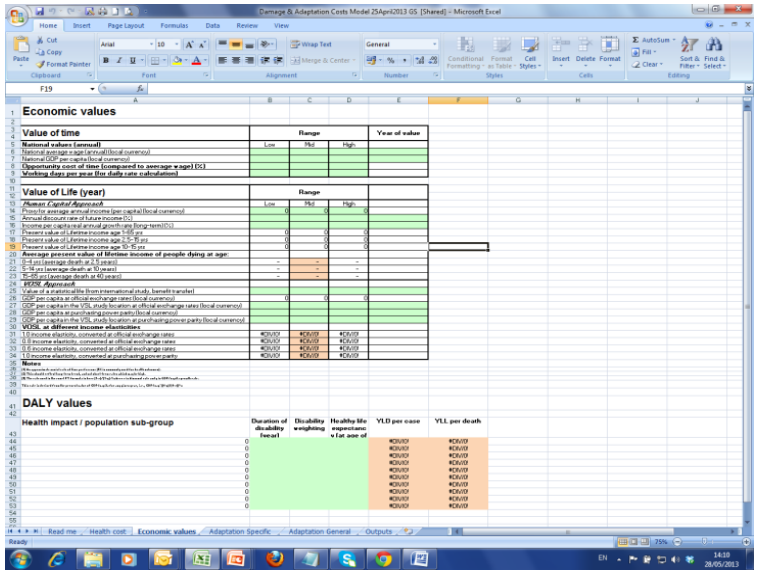
(1) the costs of inaction (*doing nothing*) in terms of the economic consequences of the health impacts of climate change;

(2) the costs of action (*implementing adaptation*) including measures in the health sector and also those taken in other sectors to protect health;

(3) the *residual costs*, as adaptation measures may not avert all climate-related health impacts.

The toolkit to estimate climate change related health and adaptation costs





The manual:

- Justification
- Methodologies
- Step by step

The spreadsheet:

- Visual aid to support user
- Simplicity and transparency
- Avoid unneeded complexity

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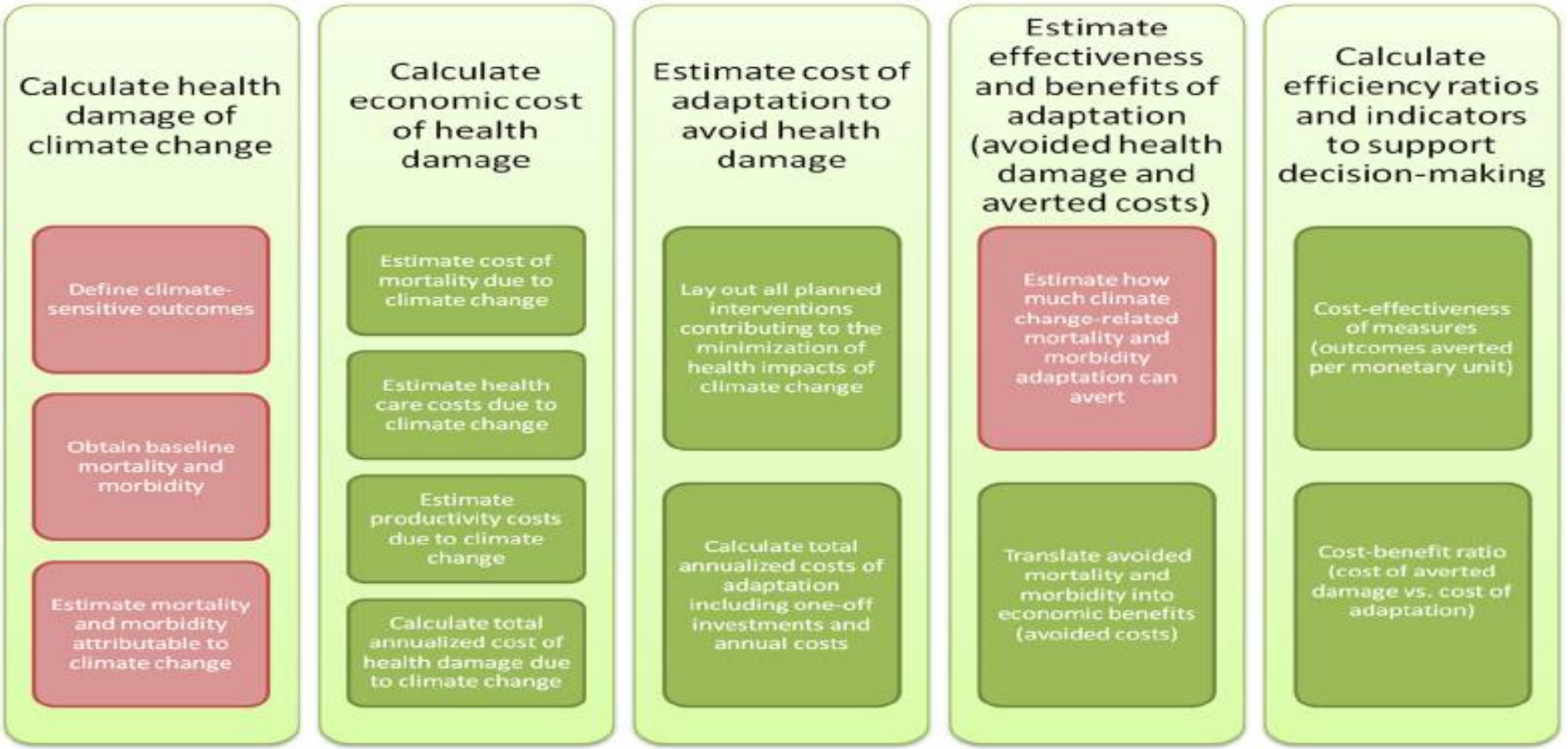
Our example
Exposure: heat waves

- The country of the exercise is prone to hot spells, which are projected to increase in frequency and intensity with climate change
- Heat increases mortality and morbidity, especially for cardiovascular and respiratory causes
- Based on some previous modelling, MoH has determined the projected mortality and morbidity attributable to heat waves in the next five years
- They have also ascertained the fraction that is due to climate change

Economic analysis of health impacts of, and adaptation to climate change



(WHO Regional Office for Europe, 2013)

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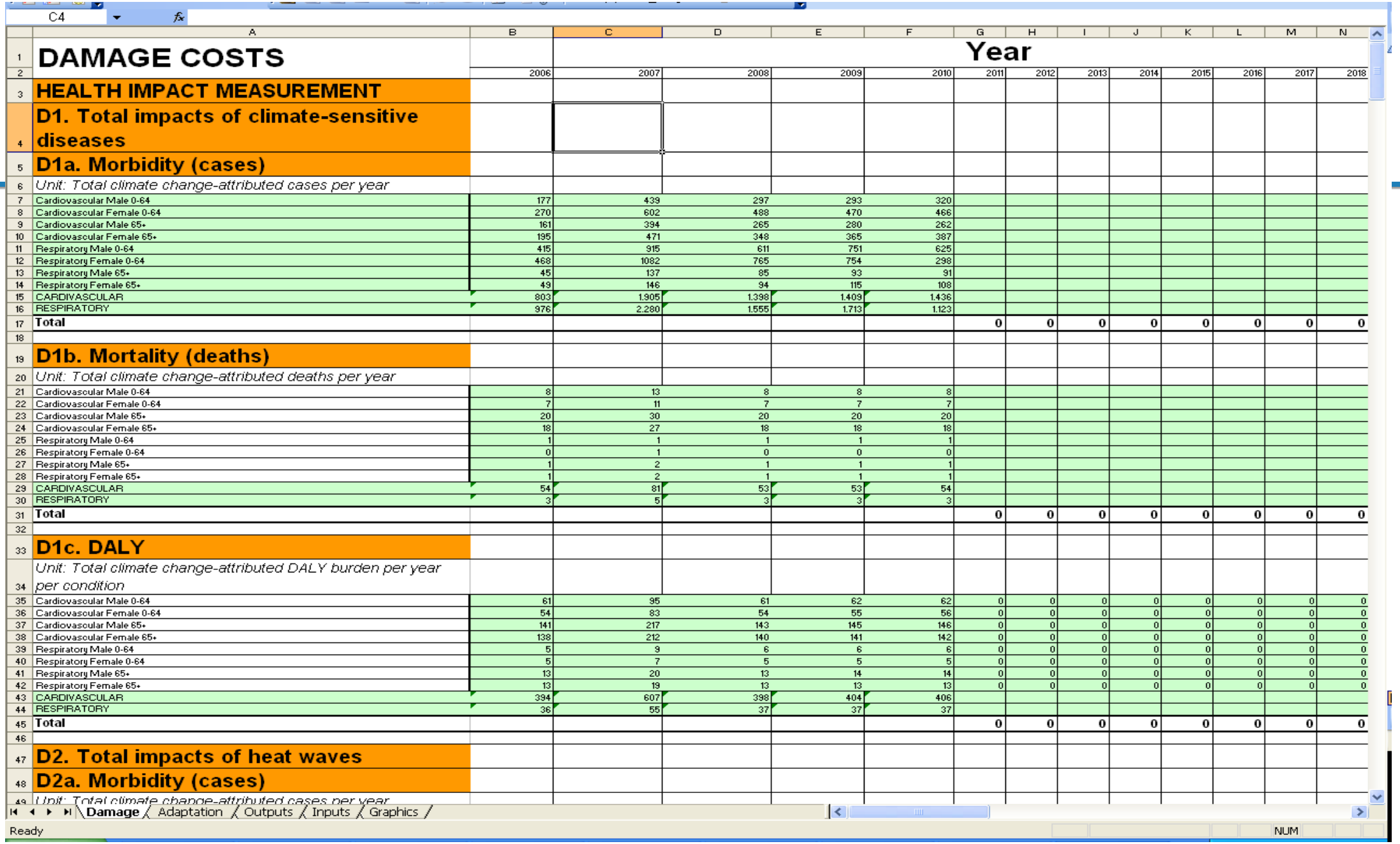

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	**DAMAGE COSTS**		**Year**											
2		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
3	**HEALTH IMPACT MEASUREMENT**													
4	**D1. Total impacts of climate-sensitive diseases**													
5	**D1a. Morbidity (cases)**													
6	*Unit: Total climate change-attributed cases per year*													
7	Cardiovascular Male 0-64	177	439	297	293	320								
8	Cardiovascular Female 0-64	270	602	488	470	466								
9	Cardiovascular Male 65+	161	394	265	280	262								
10	Cardiovascular Female 65+	195	471	348	365	387								
11	Respiratory Male 0-64	415	915	611	751	625								
12	Respiratory Female 0-64	468	1082	765	754	298								
13	Respiratory Male 65+	45	137	85	93	91								
14	Respiratory Female 65+	49	146	94	115	108								
15	CARDIVASCULAR	803	1.905	1.398	1.409	1.436								
16	RESPIRATORY	976	2.280	1.555	1.713	1.123								
17	**Total**						**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
18														
19	**D1b. Mortality (deaths)**													
20	*Unit: Total climate change-attributed deaths per year*													
21	Cardiovascular Male 0-64	8	13	8	8	8								
22	Cardiovascular Female 0-64	7	11	7	7	7								
23	Cardiovascular Male 65+	20	30	20	20	20								
24	Cardiovascular Female 65+	18	27	18	18	18								
25	Respiratory Male 0-64	1	1	1	1	1								
26	Respiratory Female 0-64	0	1	0	0	0								
27	Respiratory Male 65+	1	2	1	1	1								
28	Respiratory Female 65+	1	2	1	1	1								
29	CARDIVASCULAR	54	81	53	53	54								
30	RESPIRATORY	3	5	3	3	3								
31	**Total**						**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
32														
33	**D1c. DALY**													
34	*Unit: Total climate change-attributed DALY burden per year per condition*													
35	Cardiovascular Male 0-64	61	95	61	62	62	0	0	0	0	0	0	0	0
36	Cardiovascular Female 0-64	54	83	54	55	56	0	0	0	0	0	0	0	0
37	Cardiovascular Male 65+	141	217	143	145	146	0	0	0	0	0	0	0	0
38	Cardiovascular Female 65+	138	212	140	141	142	0	0	0	0	0	0	0	0
39	Respiratory Male 0-64	5	9	6	6	6	0	0	0	0	0	0	0	0
40	Respiratory Female 0-64	5	7	5	5	5	0	0	0	0	0	0	0	0
41	Respiratory Male 65+	13	20	13	14	14	0	0	0	0	0	0	0	0
42	Respiratory Female 65+	13	19	13	13	13	0	0	0	0	0	0	0	0
43	CARDIVASCULAR	394	607	398	404	406								
44	RESPIRATORY	36	55	37	37	37								
45	**Total**						**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
46														
47	**D2. Total impacts of heat waves**													
48	**D2a. Morbidity (cases)**													
49	*Unit: Total climate change-attributed cases per year*													

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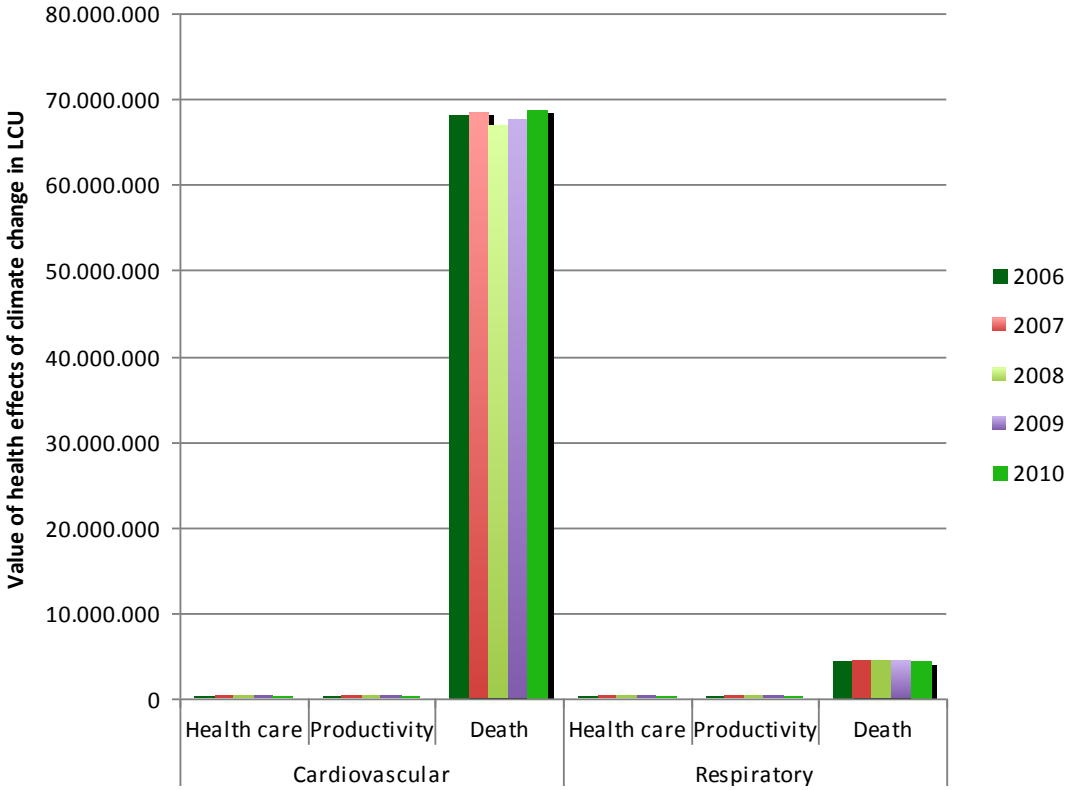
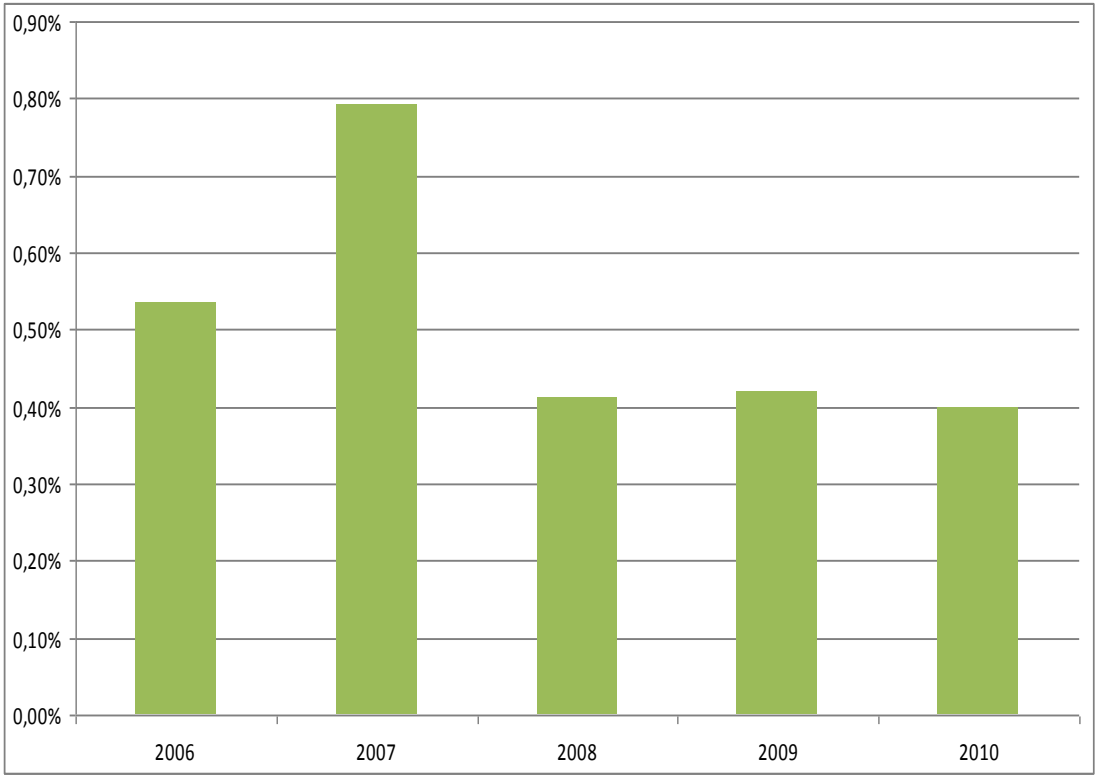
Damage costs



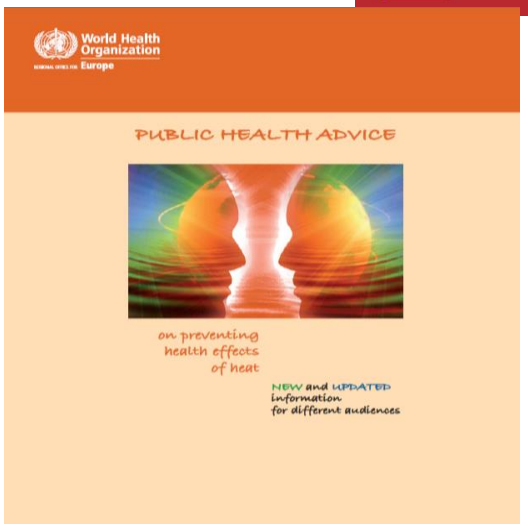
Costs of cardiovascular and respiratory diseases attributed to climate change, over a 5-year period



Damage cost of climate-change attributed health effects as percentage of GDP

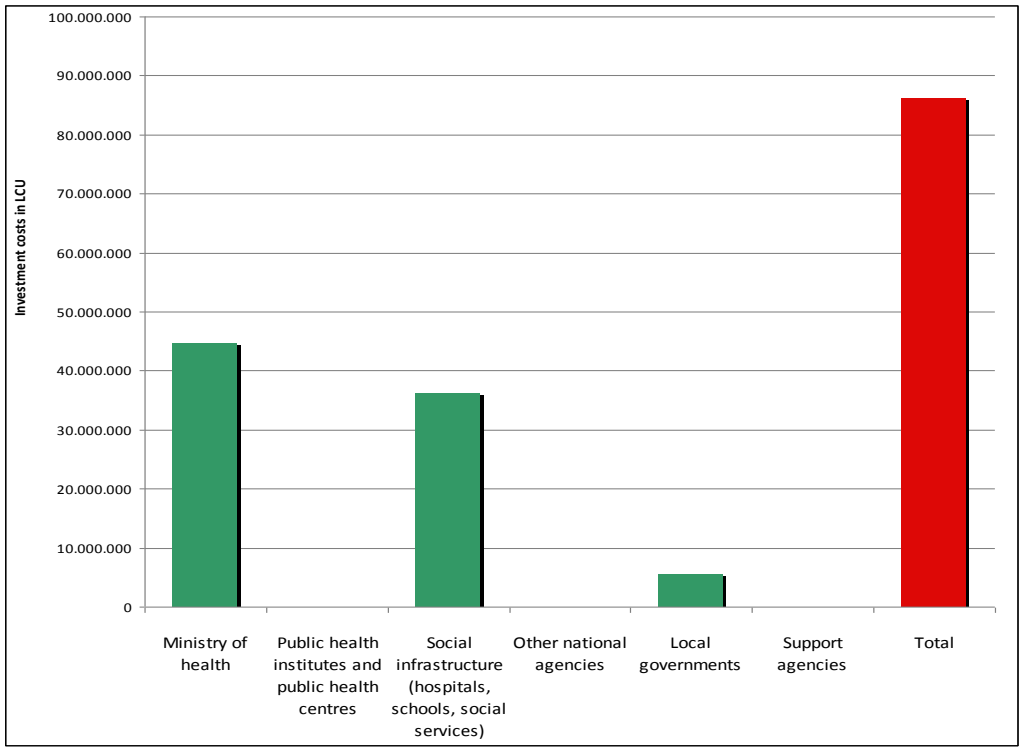
Our adaptation: a heat-health action plan

- This country will implement a national level HHAP, involving MoH, Public health institutions, other care providers, and local governments
- The HHAP includes all elements deemed relevant in the WHO guidance, and it translates into the actions listed by implementing agency in the dataset

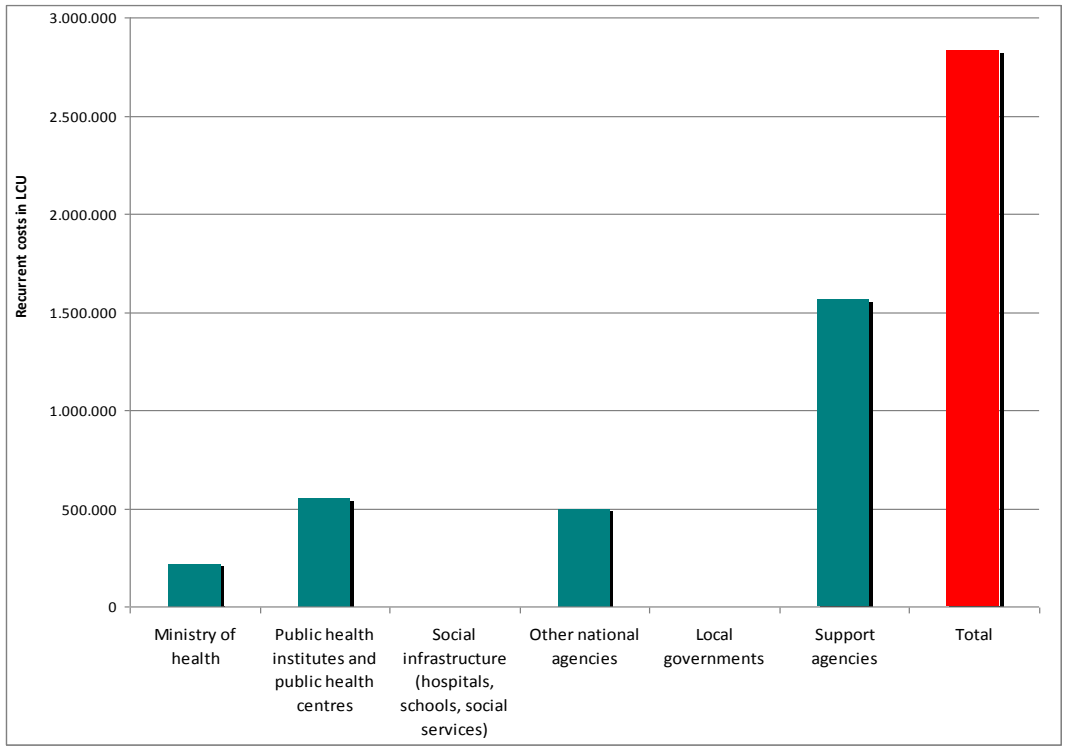


Adaptation costs

Preventing the health effects of heat-waves requires



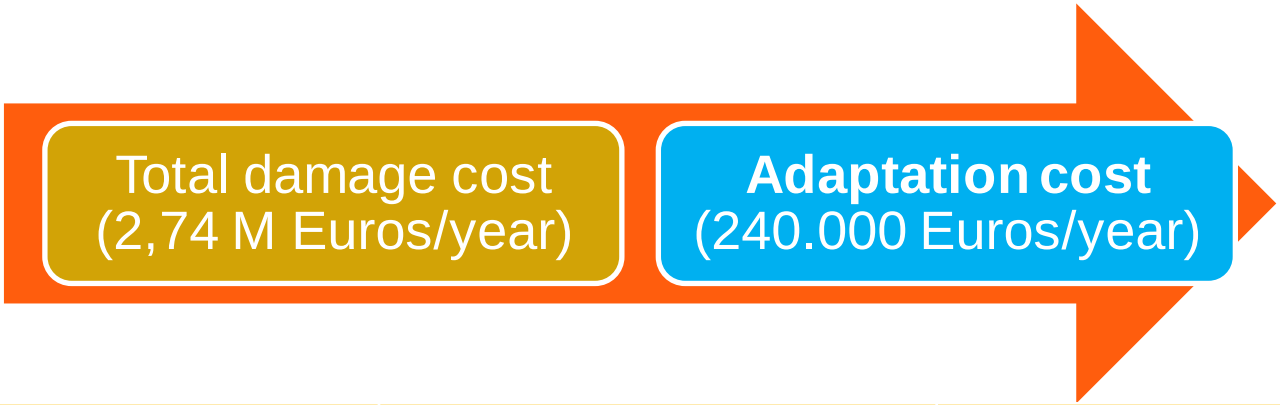
Annual recurrent costs of adaptation measures to mitigate health risks due to heat-waves resulting from climate change



One-off investment costs of adaptation measures to mitigate health risks due to heat-waves resulting from climate change

A final step….

Damage and adaptation costs can be compared at the end of the costing exercise.



Marginal costs	Adaptation costs	Private versus public
costs of health care were looked into, as not essential to distinguish for the case of the former Yugoslav Republic of Macedonia, where insured patients are reimbursed by the HIF	costs that met from the existing budget and additional resources that were raised for the adaptation plan. Activities were conducted under each agency (6 in total) grouping and costed separately.	Different types of health institution were not costed differently, but different levels of care were costed - depending on what the reimbursement rates are for different levels of care.

Important afterword

- Toolkit manual available online at http://www.euro.who.int/__data/assets/pdf_file/0018/190404/WHO_Content_Climate_change_health_DruckIII.pdf?ua=1

- Accompanying Excel spreadsheet available upon request; write to us at euroclimate@who.int and tell us a bit about your organization's profile and intended application of the tool

Thank YOU

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