



INPUT PAPER

Prepared for the Global Assessment Report on Disaster Risk Reduction 2015

**EFFECTS OF GOVERNANCE SYSTEMS AND DEVELOPMENT SITUATIONS ON
PROGRESS IN ACHIEVING SUSTAINABLE DRM CHANGE**

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1 Abstract

The paper starts by providing a brief background of the effect of governance on the ability to effect DRM change across different governance systems, with special emphasis on the decision making process at each of the risk governance stages (risk pre-assessment, risk appraisal, risk evaluation, risk management and risk communication).

Next, the paper selects a group of countries whose salient development, governance, fragility and disaster loss data and characteristics, as measured and disseminated by various international and UN organizations, are reviewed.

The performance of the selected countries in the implementation of the Hyogo Framework for Action (HFA) priorities for Action is then compared against the different development, governance, fragility and disaster loss characteristics collated in the previous sections.

Results show trends in implementation with the different development and governance characteristics. However, in order to arrive at more in depth insight into the effect of the development and governance on progress in implementing the Hyogo Framework for Action there is a need to develop core indicators and corresponding key questions and means of verification aiming at measuring the success in effecting change related to Disaster Risk Management (DRM) practices.

The final section proposes a methodology for developing such indicators, key questions and means of verification that recognizes the prevailing inequality of risk within societies, including the inequality in participating in the decision making process related to DRM, and the importance of effecting change in this regard as a key tool for reducing exposure, vulnerabilities and disaster losses.

2 Background

The Global Assessment Report for 2011 (GAR, 2011) included several background papers which stressed the importance of governance in effecting change in DRM practices. For example, a thorough discussion was provided on the effect of political economy considerations on effecting change in DRM (Williams, 2011). In addition, the International Risk Governance Council produced a seminal White Paper on risk governance (IRGC), which proposed a risk governance framework that distinguishes between analyzing and understanding a risk (Technical and Social Assessment Stage) – for which risk appraisal is the essential procedure; and deciding what to do about a risk, where risk management is the key activity (IRGC, 2005). A more detailed review of work carried out by various authors on the importance of governance and accountability in effecting DRM change was presented in a background paper to GAR 2013 (Hamdan 2013 a & b). The latter paper combined the political economy framework for analyzing change (Williams 2013) with the risk governance framework (IRGC, 2005) in order to arrive at a framework for analyzing incentives and resistance to change during different stages in the risk governance framework (i.e. the five stages in the risk governance framework as developed by the IRGC, namely Risk Pre-Assessment Stage, Risk Appraisal Stage, Risk

Evaluation Stage and Risk management Stage, all of which centred around the Risk Communication Stage).

In this paper, the above methodology will be used to identify how indicators can be developed to measure the success (or otherwise) of various countries in effecting DRM change.

3 Selection of Countries and Key Characteristics

A group of countries, with different governance and development characteristics, is selected for analyzing their respective and comparative performance in the implementation of the HFA and in achieving progress in DRM. The countries range from industrialized countries with very high development indicators, to developing countries with high, medium and low development indicators.

Table 1 below shows the Human Development Index for 2012 (UNDP, 2013), together with Inequality adjusted figures, for the selected countries.

Country	Human Development Index (HDI)	IHDI (accounting for Inequality)	Loss (%) in potential human development due to inequality
USA	0.937	0.821	12.4
Germany	0.920	0.856	6.9
France	0.893	0.812	9
Italy	0.881	0.776	11.9
UK	0.875	0.802	8.3
Chile	0.819	0.664	19
Lebanon	0.745	0.575	22.8
Sri Lanka	0.715	0.607	15.1
Algeria	0.713	Not Available	Not Available
Dominican Republic	0.702	0.510	27.3
Jordan	0.7	0.568	19.0
Thailand	0.69	0.543	21.3
Egypt	0.662	0.503	24.1
Philippines	0.654	0.524	19.9
Morocco	0.591	0.415	29.7
Pakistan	0.515	0.356	30.9
Yemen	0.458	0.31	32.3
Haiti	0.456	0.273	40.2
Djibouti	0.445	0.285	36.0
Comoros	0.429	Not Available	Not Available

Table 1 Human Development Statistics for selected countries

An important issue is the losses in the human development index due to inequality, as indeed measured by the original UNDP study (UNDP, 2013). This is particularly important since there is a trend to adopt a holistic approach post 2015 with closer integration of sustainable development and growth, disaster risk management and climate change adaptation initiatives. In this context, it becomes important to be able to measure the aggregate effect of inequality on the development process and corresponding achievements.

Fragility (in particular indices relating to security legitimacy and effectiveness) may be outside the scope of the HFA, it is important to examine the various measures used to determine the political, security, social and economic legitimacy and effectiveness of states which in turn form the hybrid state fragility indicator, as shown in Table 2 (Marshall and Cole, 2013).

Country	Fragility index	Conflict	Effectiveness	Legitimacy	Security effectiveness	Security legitimacy	Political effectiveness	Political legitimacy	Economic effectiveness	Economic legitimacy	Social effectiveness	Social legitimacy
USA	3	W	2	1	■	■	■	■	■	■	■	■
Germany	0		0	0	■	■	■	■	■	■	■	■
France	1		0	1	■	■	■	■	■	■	■	■
Italy	0		0	0	■	■	■	■	■	■	■	■
UK	0	*	0	0	■	■	■	■	■	■	■	■
Chile	2		0	2	■	■	■	■	■	■	■	■
Lebanon	5	X	1	4	■	■	■	■	■	■	■	■
Sri Lanka	13	X	7	6	■	■	■	■	■	■	■	■
Algeria	15	*	6	9	■	■	■	■	■	■	■	■
Dominican Republic	5		1	4	■	■	■	■	■	■	■	■
Jordan	7		3	4	■	■	■	■	■	■	■	■
Thailand	7		4	3	■	■	■	■	■	■	■	■
Egypt	11	X	5	6	■	■	■	■	■	■	■	■
Philippines	11	W	8	3	■	■	■	■	■	■	■	■
Morocco	7	*	5	2	■	■	■	■	■	■	■	■
Pakistan	16	W	8	8	■	■	■	■	■	■	■	■
Yemen	17	W	7	10	■	■	■	■	■	■	■	■
Haiti	15	*	9	6	■	■	■	■	■	■	■	■
Djibouti	14	*	7	7	■	■	■	■	■	■	■	■
Comoros	13		8	5	■	■	■	■	■	■	■	■

Notes:

- The Fragility Matrix scores each country on both Effectiveness and Legitimacy in four areas: Security, Political, Economic, and Social, at the end of the year 2012. Each of the Matrix indicators is rated on a four-point fragility scale: 0 (green) “no fragility”; 1 (yellow) “low fragility”; 2 (orange) “medium fragility”; and 3 (red) “high fragility” with the exception of the Economic Effectiveness indicator, which is rated on a five-point fragility scale including 4 (black) “extreme fragility”. The State Fragility Index, combines scores of the eight indicators and ranges from 0 “no fragility” to 25 “extreme fragility.”
- The definition used for fragility in the study assumes that a country’s fragility is “closely associated with its state capacity to manage conflict; develop and implement public policy; and deliver essential services. It is also closely related to its systemic resilience in maintaining system coherence, cohesion, and quality of life; responding effectively to challenges and crises, and sustaining progressive development”.
- Security effectiveness use three indicators to calculate each country’s fragility score: sum of annual scores for all wars in which the country is directly involved for each continuous period of armed conflict; interim years of “no war” between periods of armed conflict; and years of peace, or no war, since the end of most recent war period. Security legitimacy is directly related to state repression. “W” entry indicates a country is actively involved in a major armed conflict(s) in mid-2013; “X” indicates that the country has emerged from major armed conflict(s) in the past five years (since early 2008); and a “*” indicates that the country has been directly involved in one or more major armed conflicts sometime during the previous twenty year period (1988-2007) but has not experienced a major armed conflict since.
- Political effectiveness is directly related to regime / governance stability which in turn is based on three main indicators: regime durability, current leader’s years in office and total number of coup events 1997 to 2012. Political legitimacy is directly related to regime / governance inclusion which in turn is based on five indicators: factionalism, ethnic group political discrimination against 5% or more of the total population, political salience of elite ethnicity, polity fragmentation and exclusionary ideology of ruling elite.
- Economic effectiveness is related to GDP per capita, while economic legitimacy is related to manufacturing exports as a percentage of merchandise exports. Social effectiveness is related to the human development indicator, while social legitimacy is related to the infant mortality rate.

Table 2 Fragility Statistics for selected countries

Table 3 shows ranking of various governance indicators (Kaufmann et al, 2010), using six broad dimensions of governance as follows: voice and accountability, political stability and absence of violence / terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption.

Country	Voice and accountability	Political stability	Government effectiveness	Regulatory quality	Rule of law	Control of corruption
USA	1.12 / 86	0.63 / 68	1.51 / 90	1.29 / 88	1.6 / 91	1.38 / 89
Germany	1.38 / 93	0.77 / 71	1.57 / 93	1.53 / 92	1.64 / 92	1.78 / 94
France	1.22 / 90	0.55 / 64	1.33 / 88	1.11 / 83	1.43 / 90	1.42 / 90
Italy	0.89 / 74	0.50 / 63	0.41 / 66	0.73 / 75	0.36 / 62	-0.03 / 58
UK	1.32 / 92	0.41 / 60	1.53 / 92	1.64 / 95	1.69 / 93	1.64 / 92
Chile	1.04 / 80	0.35 / 59	1.25 / 87	1.54 / 93	1.37 / 88	1.56 / 91
Lebanon	-0.42 / 35	-1.65 / 6	-0.34 / 43	-0.12 / 47	-0.75 / 27	-0.87 / 22
Sri Lanka	-0.60 / 30	-0.71 / 23	-0.24 / 46	-0.12 / 48	-0.11 / 52	-0.24 / 52
Algeria	-0.91 / 23	-1.34 / 9	-0.55 / 34	-1.29 / 9	-0.79 / 26	-0.54 / 36
Dominican Republic	0.05 / 53	0.23 / 55	-0.55 / 35	-0.14 / 47	-0.70 / 30	-0.83 / 23
Jordan	-0.73 / 27	-0.52 / 30	-0.04 / 54	0.18 / 57	0.37 / 63	0.07 / 61
Thailand	-0.34 / 37	-1.21 / 13	0.21 / 61	0.23 / 58	-0.17 / 50	-0.34 / 47
Egypt	-0.74 / 27	-1.48 / 8	-0.77 / 25	-0.49 / 33	-0.45 / 40	-0.57 / 34
Philippines	-0.04 / 48	-1.16 / 15	0.08 / 58	-0.06 / 52	-0.55 / 36	-0.58 / 33
Morocco	-0.61 / 29	-0.46 / 32	-0.04 / 53	-0.09 / 50	-0.19 / 49	-0.41 / 42
Pakistan	-0.87 / 24	-2.68 / 1	-0.79 / 23	-0.73 / 25	-0.91 / 19	-1.06 / 14
Yemen	-1.39 / 9	-2.43 / 1	-1.28 / 9	-0.70 / 27	-1.27 / 8	-1.23 / 8
Haiti	-0.80 / 25	-0.79 / 21	-1.63 / 2	-0.95 / 21	-1.34 / 7	-1.24 / 6
Djibouti	-1.42 / 8	0.17 / 52	-1.10 / 14	-0.44 / 35	-0.78 / 27	-0.38 / 45
Comoros	-0.53 / 31	-0.39 / 35	-1.55 / 3	-1.42 / 8	-1.03 / 16	-0.73 / 26

Notes

1. Figures in Cells are Estimate / Rank
2. Rank 0 is the lowest (worst) and 100 is the highest (best).
3. Estimates of governance ranges approximately from -2.5 (weak) to + 2.5 (strong).

Table 3 Governance Statistics for selected countries

Table 4 shows disaster losses (EM-DAT, 2013a), under five broad hazard categories: geophysical, Meteorological, hydrological, Climatological and biological.

Country	Geo-physical	Meteo- rological	Hydro- logical	Climato- logical	Bio- logical	Total (Billion US\$)	Cost of Top ten / Total Cost
USA	41.90167	568.91951	56.63626	67.0791	0	734.536540	0.47
Germany	0.062	20.6303	13.6596	1.95	0	36.3019	0.78
France	0	25.54105	7.30364	6.792	0	39.63669	0.79
Italy	49.287952	3.3799	24.71481	3.822601	0	81.205263	0.88
UK	0.06	13.555	19.10023	0	0	32.7152	0.76
Chile	34.62707	0.0093	0.7556	1.135	0	36.5270	0.95
Lebanon	0	0.155	0.01	0	0	0.165	1
Sri Lanka	1.3165	0.1943	0.980564	0	0	2.4914	0.98
Algeria	10.270929	0	1.543917	0	0	11.8148	1
Dominican Republic	0	2.79791	0.059503	0.006	0	2.863413	0.97
Jordan	0	0	0.0034	0.4	0	0.4034	1
Thailand	1	0.911039	44.89842	0.424	0	47.2335	0.95
Egypt	1.2	0.001	0.155	0	0	1.3560	1

Country	Geo-physical	Meteo- rological	Hydro- logical	Climato- logical	Bio- logical	Total (Billion US\$)	Cost of Top ten / Total Cost
Philippines	0.76368	8.956033	3.312236	0.064453	0	13.0964	0.5
Morocco	0.52	0.00005	0.3302	0.900909	0	1.7512	1
Pakistan	5.229755	1.715036	19.38618	0.247	0	26.5780	0.97
Yemen	0	0	1.6115	0	0	1.6115	1
Haiti	8.02	1.286906	0.001959	0.001	0	9.3099	1
Djibouti	0	0	0.005719	0	0	0.005719	1
Comoros	0	0.042804	0.005	0	0	0.0478	1
Notes							
1. Geophysical hazards include earthquakes and tsunamis, volcanoes and dry mass movements. Meteorological hazards are mainly storms. Hydrological hazards include floods and wet mass movements, Climatological include extreme temperature, drought and wildfires, biological include epidemics, insect infestation and stampede.							
2. In several instances, there are reports of disasters without any corresponding monetary values.							

Table 4 Direct Economic Cost of disasters (billion US \$) 1900 - 2013

4 Methodology

Table 5 summarizes the salient features in the Hyogo Framework for Action (HFA) Monitoring Template (UNISDR, 2013), according to Priority for Action (PoA) and corresponding Core Indicators (CI), Key Questions (KQ) and Means of verification (MoV). Answers within the different national reports will be used to analyze inter-relationships between governance systems and development situations with DRM and risk governance characteristics.

HFA PoA	Core Indicators (CI)	Key Questions (KQ)	Means of Verification (MoV)
HFA PoA 1: Ensure that disaster risk reduction is a national and local priority with a strong institutional basis for implementation	CI 1: National policy and legal framework for disaster risk reduction exists with decentralised responsibilities and capacities at all levels	KQ 1: Is DRR included in development plans and strategies?	MoV 1: National
			MoV 2: Sectoral
			MoV 3: Climate change
			MoV 4: Poverty reduction
			MoV 5: CCA / UNDAF
			MoV 6: Civil Defence
		KQ 2: Have legislative and/or regulatory provisions been made for managing disaster risk?	N/A
	CI 2: Dedicated and adequate resources are available to implement disaster risk reduction activities at all administrative levels	KQ 1: What is the ratio of the budget allocation to risk reduction versus disaster relief and reconstruction	MoV 1: % RRP in National Budget
			MoV 2: % R&R in National Budget
			MoV 3: % RRP in Local Budget
			MoV 4: % R&R in Local Budget
			MoV 5: USD allocated to hazard proofing sectoral investments
	CI 3: Community participation and decentralization are ensured through the delegation of authority and resources to local levels	KQ 1: Do local governments have legal responsibility and regular / systematic budget allocations for DRR	MoV 1: Specific legislation for DRR
			MoV 2: Regular budget allocation for DRR to local government
			MoV 3: % of local budget allocation assigned for DRR
	CI 4: A national multi-sectoral platform for disaster risk reduction is functioning	KQ 1: Are civil society organizations, national finance and planning institutions, key economic and development sector organizations represented in the national platform	MoV 1: # CSO
MoV 2: # Civil Finance & Planning Institutions			
MoV 3: # Sectoral Organizations			
MoV 4: # Private sector institutions			
MoV 5: # of Science / Academic Institutions			
MoV 6: # of Women's Organizations			
	KQ 2: Where is the coordinating lead institution for disaster risk reduction located	N/A	
HFA PoA 2: Identify, assess and monitor disaster risks and enhance early warning	CI 1: National and local risk assessments based on hazard data and vulnerability information are available and include risk assessments for key sectors	KQ 1: Is there a national multi-hazard risk assessment available to inform planning and development decisions?	MoV 1: MHRA (% of Schools Assessed & % of Schools unsafe)
			MoV 2: GDVCA
			MoV 3: Agreed national standards for multi hazard risk assessments
			MoV 4: Risk assessment held by a central repository
			MoV 5: Common format for risk assessment
			MoV 6: Risk assessment format customised by user
			MoV 7: Is future/probable risk assessed?
		KQ 2: Please list the sectors that have already used disaster risk assessment as a precondition for sectoral development planning and programming.	
	CI 2: Systems are in place to monitor, archive and disseminate data on key hazards and vulnerabilities	KQ 1: Are disaster losses and hazards systematically reported, monitored and analyzed?	MoV 1: Disaster loss databases exist and are regularly updated
			MoV 2: Reports generated and used in planning by finance, planning and sectoral line ministries
			MoV 3: Hazards are consistently monitored across localities and territorial boundaries
	CI 3: Early warning systems are in place for	KQ 1: Do risk prone communities receive timely	MoV 1: Early warnings acted on effectively

	all major hazards, with outreach to communities	and understandable warnings of impending hazard events?	MoV 2: Local level preparedness
			MoV 3: Communication systems and protocols used and applied
			MoV 4: Active involvement of media in early warning dissemination
	CI 4: National and local risk assessments take account of regional / trans-boundary risks, with a view to regional cooperation on risk reduction	KQ 1: Does your country participate in regional or sub-regional actions to reduce disaster risk?	MoV 1: Establishing / maintaining regional hazard monitoring
			MoV 2: Regional or sub-regional risk assessment
MoV 3: Regional or sub-regional early warning			
MoV 4: Establishing and implementing protocols for trans-boundary information sharing			
HFA PoA 3: Use knowledge, innovation and education to build a culture of safety and resilience at all levels	CI 1: Relevant information on disasters is available and accessible at all levels, to all stakeholders (through networks, development of information sharing systems, etc)	KQ 1: Is there a national disaster information system publicly available?	MoV 1: Information is proactively disseminated
			MoV 2: Established mechanisms for access / dissemination (internet, public information broadcasts – radio, TV,)
			MoV 3: Information is provided with proactive guidance to manage disaster risk
	CI 2: School curricula, education material and relevant trainings include disaster risk reduction and recovery concepts and practices	KQ 1: Is DRR included in the national educational curriculum?	primary school curriculum
			secondary school curriculum
			university curriculum
			professional DRR education programmes
	CI 3: Research methods and tools for multi-risk assessments and cost benefit analysis are developed and strengthened	KQ 1: Is DRR included in the national scientific applied-research agenda/budget?	Research programmes and projects
			Research outputs, products or studies are applied / used by public and private institutions
			Studies on the economic costs and benefits of DRR
	CI 4: Countrywide public awareness strategy exists to stimulate a culture of disaster resilience, with outreach to urban and rural communities	KQ 1: Do public education campaigns for risk-prone communities and local authorities include disaster risk?	Public education campaigns for enhanced awareness of risk
			Training of local government
			Disaster management (preparedness and emergency response)
			Preventative risk management (risk and vulnerability)
			Guidance for risk reduction
HFA PoA 4: Reduce the underlying risk factors	CI 1: Disaster risk reduction is an integral objective of environment related policies and plans, including for land use, natural resource management and adaptation to climate change	KQ 1: Is there a mechanism in place to protect and restore regulatory ecosystem services? (associated with wet lands, mangroves, forests etc)	Protected areas legislation
			Payment for ecosystem services (PES)
			Integrated planning (for example coastal zone management)
			Environmental impacts assessments (EIAs)
			Climate change adaptation projects and programmes
	CI 2: Social development policies and plans are being implemented to reduce the vulnerability of populations most at risk	KQ 1: Do social safety nets exist to increase the resilience of risk prone households and communities?	Crop and property insurance
			Temporary employment guarantee schemes
			Conditional and unconditional cash transfers

			Micro finance (savings, loans, etc.)
			Micro insurance
	CI 3: Economic and productive sectoral policies and plans have been implemented to reduce the vulnerability of economic activities	KQ 1: Are the costs and benefits of DRR incorporated into the planning of public investment?	National and sectoral public investment systems incorporating DRR - e.g. public infrastructure, transport and communication, economic and productive assets Investments in retrofitting infrastructure, including schools and hospitals
	CI 4: Planning and management of human settlements incorporate disaster risk reduction elements, including enforcement of building codes	KQ 1: Is there investment to reduce the risk of vulnerable urban settlements?	Investment in drainage infrastructure in flood prone areas Slope stabilisation in landslide prone areas Training of masons on safe construction technology Provision of safe land and housing for low income households and communities Risk sensitive regulation in land zoning and private real estate development Regulated provision of land titling
	CI 5: Disaster risk reduction measures are integrated into post-disaster recovery and rehabilitation processes	KQ 1: Do post-disaster programmes explicitly incorporate and budget for DRR for resilient recovery?	% of recovery and reconstruction funds assigned to DRR DRR capacities of local authorities for response and recovery strengthened Risk assessment undertaken in pre- and post-disaster recovery and reconstruction planning Measures taken to address gender based issues in recovery
	CI 6: Procedures are in place to assess the disaster risk impacts of major development projects, especially infrastructure	KQ 1: Are the impacts of disaster risk that are created by major development projects assessed?	
		KQ 2: Are cost/benefits of disaster risk taken into account in the design and operation of major development projects?	By national and sub-national authorities and institutions By international development actors Impacts of disaster risk taken account in Environment Impact Assessment (EIA)
HFA PoA 5: Strengthen disaster preparedness for effective response at all levels	CI 1: Strong policy, technical and institutional capacities and mechanisms for disaster risk management, with a disaster risk reduction perspective are in place	KQ 1: Are there national programmes or policies for disaster preparedness, contingency planning and response?	DRR incorporate in these programmes and policies The institutional mechanisms exist for the rapid mobilisation of resources in a disaster, utilising civil society and the private sector; in addition to public sector support
		KQ 2: Are there national programmes or policies to make schools and health facilities safe in emergencies?	Policies and programmes for school and hospital safety Training and mock drills in school and hospitals for emergency preparedness
		KQ 3: Are future disaster risks anticipated through scenario development and aligned preparedness planning?	Potential risk scenarios are developed taking into account climate change projections Preparedness plans are regularly updated based on future risk scenarios
	CI 2: Disaster preparedness plans and contingency plans are in place at all	KQ 1: Are the contingency plans, procedures and resources in place to deal with a major disaster?	Plans and programmes are developed with gender sensitivities
			Risk management/contingency plans for continued basic service delivery

	administrative levels, and regular training drills and rehearsals are held to test and develop disaster response programmes		Operations and communications centre
			Search and rescue teams
			Stockpiles of relief supplies
			Shelters
			Secure medical facilities
			Dedicated provision for disabled and elderly in relief, shelter and emergency medical facilities
			Businesses are a proactive partner in planning and delivery of response
	CI 3: Financial reserves and contingency mechanisms are in place to support effective response and recovery when required	KQ 1: Are financial arrangements in place to deal with major disaster?	National contingency and calamity funds
	CI 4: Procedures are in place to exchange relevant information during hazard events and disasters, and to undertake post-event reviews	KQ 1: Has an agreed method and procedure been adopted to assess damage, loss and needs when disasters occur?	The reduction of future risk is considered in the use of calamity funds
			Insurance and reinsurance facilities
			Catastrophe bonds and other capital market mechanisms
			Damage and loss assessment methodologies and capacities available
			Post-disaster need assessment methodologies
		Post-disaster needs assessment methodologies include guidance on gender aspects	
		Identified and trained human resources	
Notes: 1. RRP: Risk Reduction and Prevention; 2. R&R: Relief and Reconstruction, 3. MHRA: Multi Hazard Risk Assessment, 4. GDVCA: Gender Disaggregated Vulnerability and Capacity Assessment, 5.			

Table 5 HFA Core Indicators and Corresponding Key Questions and Means of verifications

The concept paper (UNISDR, 2013b) identified several questions which are shown in Table 6, together with the relevant core indicators in the monitoring template that may be used to inform the discussion under each question. Due to succinctness requirements, and to avoid repetition, a limited number of the identified indicators were eventually selected based on their ability to meet one or more of the following two criteria:

- Where there is a wide variation in answers between the selected group of countries.
- Where there is a direct impact on both development situations and DRM practices.

Questions raised by Concept Note	Core indicator in the HFA monitoring template				
Effect of variations in Governance systems and development situations on the following characteristics of Disaster Risk Management:					
National level	CI1:KQ1:MoV1-6; CI1:KQ2; CI2:KQ1:MoV1-2,5;				
Local Level	CI2:KQ1:MoV3-4; CI3:KQ1				
Urban Settings					
Rural Settings					
I/E & emerging risks		CI1:KQ1:MoV7; CI2:KQ1			
Reduce Risk Drivers				CI1-CI4	
preparedness					CI2
Response					CI3, CI4
EW		CI3:KQ1	CI1:KQ1		
recovery				CI5	CI3, CI4
Disaster Mitigation & DRR				CI1-CI4	
Roles, engagement & coordination with stakeholders	CI4: KQ1				
DRR policies, frameworks and plans	CI1:KQ1				
DRR legislation and regulation	CI1:KQ2; CI3: KQ1				
Allocating resources for DRR	CI2: KQ1: MoV1-5;				
Risk sensitive development investments	CI1:KQ1:MoV2; CI2:KQ1:MoV5	CI1: KQ1-KQ2; CI2: KQ1		CI6	
Fostering technical and human capacities			CI2:KQ1; CI3:KQ1;		CI1
Governance of DRM					
Accountability	CI1:KQ2; CI3:KQ1				
Transparency	CI2:KQ1:MoV1-4 CI3:KQ1:MoV3	CI1:KQ1:MoV1			
Participation	CI1 MoV1, CI4:KQ1				
Inclusiveness		CI1 MoV2; CI2:KQ1;	CI1:KQ1	CI5:KQ1:MoV4	CI2:KQ1:MoV1, MoV8;
Effectiveness & efficiency	CI1: KQ1: MOV1-4				

Note: HFA PoA: refers to Hyogo Framework for Action Priority for Action, CI: refers to Core Indicator, KQ: refers to Key Question, MoV: refers to Means of Verification corresponding to HFA PoA, KQ & CI under consideration.

Table 6 Concept Note Questions and corresponding HFA Core Indicators

Notwithstanding the importance of the indicators and questions in the national monitoring template, examination of the core indicators in Table 5 shows that most of these refer to inputs (e.g. policies and strategies in place). Indeed a limited number of questions address outputs such as the schools and hospitals assessed and the percentage of budget allocated to DRM, and these are often left unanswered. Even a more limited questions, if any, address the success of states in effecting DRM change, particularly from a risk governance perspective (i.e effecting change in the ability of those most negatively impacted by disasters to effectively participate in the decision making process which often attenuates disaster risk drivers and form the basis of disaster root causes including unchecked urban expansion, environmental degradation, poverty and weak governance in general). Furthermore, a limited number of questions address the success of states in reversing the trend of disaster losses (both extensive and intensive losses in livelihoods, economic assets, injuries and fatalities) which hinders the development process and impedes poverty reduction efforts. These issues must be addressed in any post 2015 monitoring template.

5 Analysis

5.1 Effect of Development Situations on Disaster Risk Management Practices

The effect of development situations on disaster risk management practices is summarized in Table 7, which shows the overall national score for HFA, together with overall national scores for each priority area. In particular, the following conclusions can be made:

- There is a general trend for HFA scores to improve with improved HDI scoring (see Figure 1). Also shown in the figure is the Coefficient of Determination (R^2) which indicates how well data points fit a straight line.
- A similar trend is observed when examining the variation of the HDI with the overall national HFA priority area scores for each of the five priority areas (as can be seen in Figures 2 to 6).
- Plotting the inequality adjusted human development index (IFDI) against the HFA scores leads to a lower coefficient of variation. This is against the prevailing thought on the inequality of risk according to gender variations, where gender is described in its broadest terms as variations in sex, ability, age, social and economic backgrounds. One possible explanation may be due to the fact that the IHDI accounts for in-country inequality which the HFA scoring at the national level is unable to capture effectively. This in turn sheds light on areas where future effort should be directed post 2015.

Country	Human Development Index (HDI)	HDI Loss (%) due to inequality	HFA Overall Score	HFA1 Overall Score	HFA2 Overall Score	HFA3 Overall Score	HFA4 Overall Score	HFA 5 Overall Score
USA	0.937	12.4	3.80	3.75	4	3.75	3.50	4
Germany	0.920	6.9	3.87	4.25	4	3.75	3.33	4
France	0.893	9	3.75	4	3.75	3.25	3.50	4.25
Italy	0.881	11.9	3.98	3.5	4.25	4	3.67	4.5
UK	0.875	8.3	4.15	4	4.5	4	4.00	4.25
Chile	0.819	19	3.72	3.5	3.5	3.5	3.83	4.25

Country	Human Development Index (HDI)	HDI Loss (%) due to inequality	HFA Overall Score	HFA1 Overall Score	HFA2 Overall Score	HFA3 Overall Score	HFA4 Overall Score	HFA 5 Overall Score
Lebanon	0.745	22.8	3.15	2.75	3	3.5	3.00	3.5
Sri Lanka	0.715	15.1	3.55	3.75	3.75	3.75	3.50	3
Algeria	0.713	Not Available	3.58	3.5	3.25	2.75	4.17	4.25
Dominican Republic	0.702	27.3	3.13	3	3.25	2.5	3.17	3.75
Jordan	0.7	19.0	2.55	2.25	2.75	2.25	2.50	3
Thailand	0.69	21.3	3.62	3.75	3	3.75	3.33	4.25
Egypt	0.662	24.1	3.32	3.5	3.25	3	3.33	3.5
Philippines	0.654	19.9	3.30	3.5	3.5	3	2.50	4
Morocco	0.591	29.7	2.75	2.75	3	3	3.00	2
Pakistan	0.515	30.9	3.38	4	3.25	3	3.17	3.5
Yemen	0.458	32.3	1.33	1.75	1.25	1.5	1.17	1
Haiti	0.456	40.2	2.33	2.75	2.25	2	1.67	3
Djibouti	0.445	36.0	2.80	2.25	3	3.25	3.00	2.5
Comoros	0.429	Not Available	1.85	1.5	2.5	2.25	1.50	1.5

Table 7 Effect of Development Situation on DRM practices for selected countries

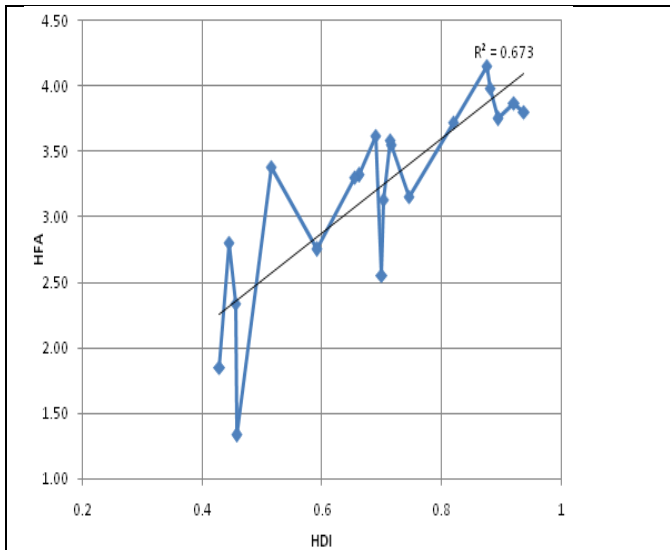


Figure 1 Variation of Human Development Index with Overall National HFA Score

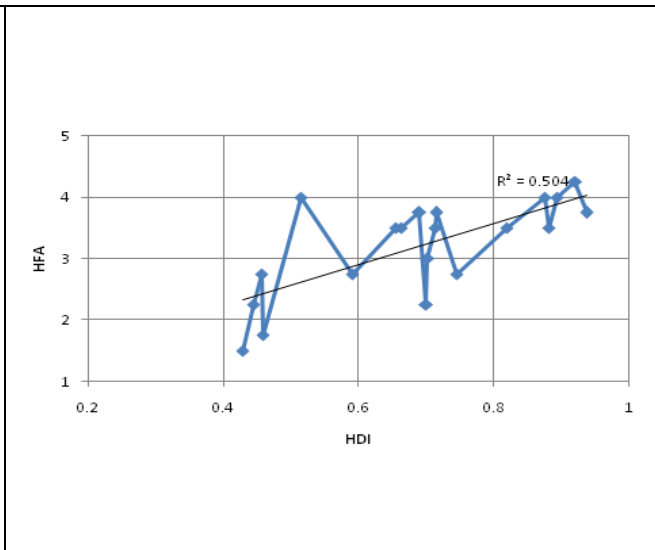


Figure 2 Variation of Human Development Index with Overall National HFA1 Score

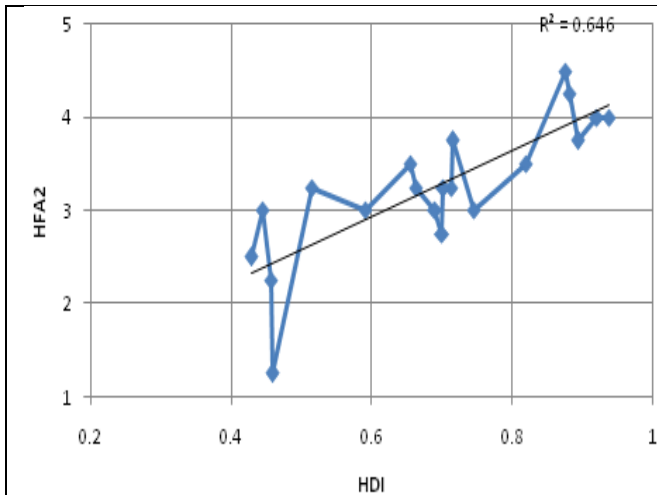


Figure 3 Variation of Human Development Index with Overall National HFA2 Score

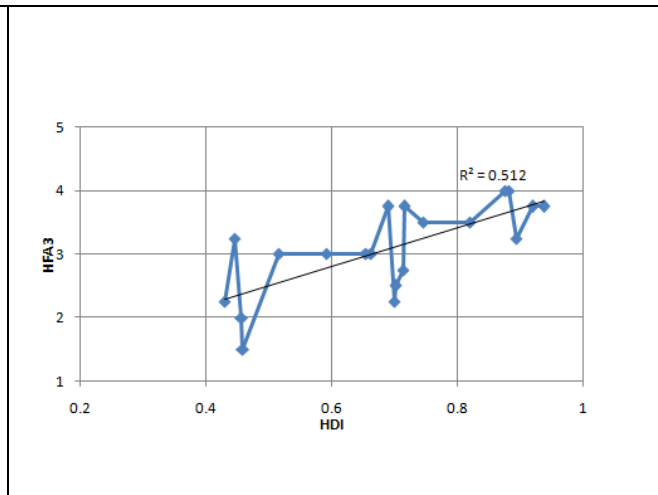


Figure 4 Variation of Human Development Index with Overall HFA3 Score

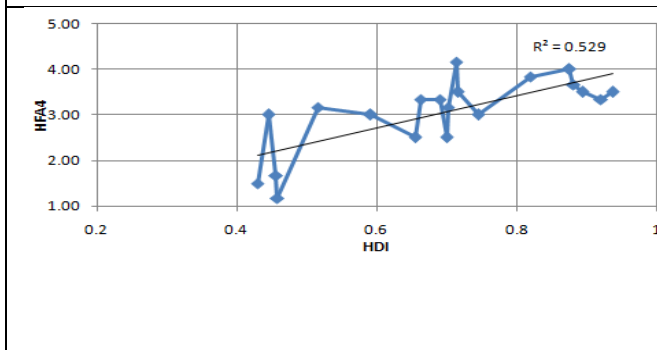


Figure 5 Variation of Human Development Index with Overall HFA4 Score

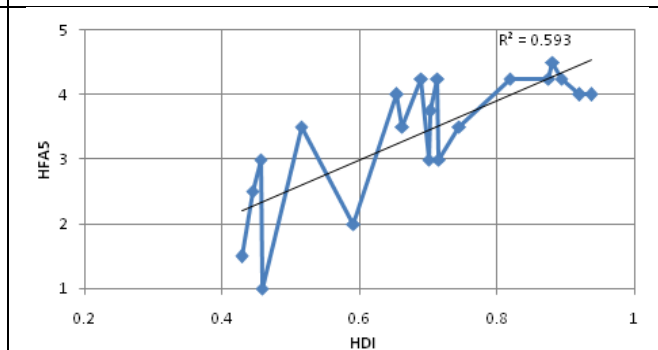


Figure 6 Variation of Human Development Index with Overall HFA5 Score

Next, Table 8 shows countries divided into four development categories according to the UNDP HDI, and variation of development category is monitored against 1) the HFA Means of Verification corresponding to Core Indicator 2 of HFA Priority for Action 2 (disaster loss data bases) and 2) the disaster losses as reported by the EM-DAT database, summarized in Table 4. In particular, the following comments can be made:

- The treatment (or lack of) extensive risk has a direct impact on the inequality of risk as it affects primarily poorer communities and households living in remote rural urban as well as poor neighborhoods and slums in urban areas.
- The treatment of extensive risk can be qualitatively assessed using subjective measures in the form of answers to the HFA self assessment national template regarding the existence and use of disaster loss databases (core indicator 2 corresponding to HFA priority for action 2). These answers can be compared against evidence based indicators in terms of the percentage of top ten losses as compared to total losses from the period 1900 to 2012, as reported in EM-DAT disaster loss database. Scores for countries under each development categories are averaged. National scores can reach a maximum of 3 (corresponding to a positive answer to the three means of verification questions: 1. loss

databases in existence, 2. data used by finance and planning ministries and 3. Hazards being consistently monitored across localities) and a minimum of zero (corresponding to a negative answer to the three above means of verification questions).

- There is a general downward trend for the average national score for CI2, HFA2 with decrease in human development status. The fact that the *high* human development category scores higher than the *very high* human development category may be attributed to Germany which scored 0 in all three means of verification and to the fact that those high human development countries under consideration may have overestimated the achievements.
- A similar trend can be inferred when examining evidence based indicators from the EM-DAT disaster loss database, which shows the ratio of disaster losses corresponding to the ten most severe disasters (in terms of direct economic losses) as compared to total economic disaster losses. It is assumed that this ratio, in at least some part, reflects the attention to extensive risk (when the ratio is low) and not simply intensive risk. Such attention to extensive risk would indicate sound DRM practices targeting the most vulnerable communities and households and attempting to address the inequality of risk within different societies. In this case a more clear trend can be seen, as follows:
 - The separation between the very high development countries and high development countries is very clear, even when the United States is removed from the group of high developed countries.
 - The difference between high, medium and low developed countries is minimal. While this may be due to a lack of mechanisms for collating data, it is then in complete contradiction to the subjective answers given for the high developed countries in the second column of the Table. This again shows the challenge in collating subjective indicators related to DRM.

Human Development	Average National Score for CI2, HFA2	Ratio of top ten losses versus total losses (Average per development category)
Very High	1.83 / 2.20 ¹	0.77 / 0.83 ²
High	2	0.98
Medium	1.33	0.91 / 0.99 ³
Low	1.2	0.99

Notes:

1. The second number (2.20) shows the results for the very high development countries without accounting for Germany, which scored 0 for all three MoV for CI2 HFA2.
2. The second number (0.83) shows the result for the very high human development countries without accounting for the USA, which had a ratio of 0.47.
3. The second number (0.99) shows the result for the medium human development countries without accounting for the Philippines which had a ratio of 0.5.

Table 8 Effect of Development Situation on Treatment of Intensive and Extensive Risks

Next, countries are divided to four categories according to the UNDP HDI, and variation of development category is monitored against 1) the HFA Means of Verification corresponding to Core Indicator 2 of HFA Priority for Action 4 (social development policies and plans are being implemented to reduce the vulnerability of populations most at risk) and 2) the HFA Means of Verification corresponding to Core Indicator 3 of HFA Priority for Action 4 (Economic and

sectoral policies and plans have been implemented to reduce the vulnerability of economic activities), as shown in Table 9. Also shown are measures for economic effectiveness and social and economic legitimacy, as used by some fragile indices. In particular, the following comments can be made:

- Social policies to reduce vulnerability tend to improve with increasing human development index. However, the score for high development is higher than very high development, which may be attributed to 1) inaccuracy in filling the self-assessment report, 2) limited size of the sample chosen, and / or 3) other factors with higher impact on the result (e.g. the frequency of recurring disasters). This anomaly is not seen when examining social legitimacy variation with development category, as measured by infant mortality rate – which is a less subjective measure than social policies to reduce vulnerability).
- Economic and sectoral policies to reduce vulnerability tend to improve with increasing human development index, in a manner also consistent with economic effectiveness (as measured by GDP per capita).

Human Development	social policies to reduce vulnerability of those most at risk	social legitimacy (infant mortality rate)	economic / sectoral policies to reduce vulnerability of economic activities	economic effectiveness (GDP per capita)	economic legitimacy (manufacturing export as a % of merchandise export)
Very High	0.57	0.00	0.75	0.00	0.33
High	0.87	0.33	0.67	1.00	0.00
Medium	0.37	1.00	0.58	1.67	0.67
Low	0.05	2.00	0.30	3.40	1.60

Notes:

1. Score for Social policies for each development categories is averaged from nation scores for countries under each category. The same applies for scores for economic / sectoral policies.
2. National scores for social policies is obtained by adding the total number of social policy categories adopted, where each category scores 0.2, thereby allowing a maximum score of 1.0 (categories include Crop / property insurance, temporary employment guarantee schemes, conditional and unconditional cash transfer, micro finance, and micro insurance).
3. National scores for economic and productive sectoral policies is obtained by adding the total number of categories adopted, where each category scores 0.5, thereby allowing a maximum score of 1.0 (categories include national / sectoral investment incorporate DRR, and investment in retrofitting structures).

Table 9 Effect of Development Situation on Reduction of Social and Economic Factors contributing to Vulnerability

5.2 Effect of Governance Situations on Disaster Risk Management Practices

Next, countries are divided to four categories according to the UNDP HDI, and variation of development category is monitored against different governance indicators including: 1) availability of legislation / regulation for DRM, 2) local legislation for DRM, 3) voice and accountability, 4) participation in the national platform, 5) inclusiveness and 6) effectiveness, as shown in Table 10. In particular, the following comments can be made:

- Accountability is measured using three indicators, two from the national HFA template (legislation / regulation for DRM and local legislation for DRM) and one from the World Bank database on governance indicators. All reveal the same trend showing that accountability for DRM decisions improves with higher development categories. The

difference in scores becomes wider at the local level in comparison to that at the national level.

- Participation in the decision making process is measured in terms of number of stakeholders represented in the national platform for DRM (obtained from the HFA monitoring template) and from the voice and accountability indicator (obtained from the World Bank database). Results show a trend of participation increasing with reduced development category, probably due to increased losses within vulnerable communities for the low development categories and the associated lobbying of international aid agencies and internal communities for participation.
- Results for the inclusiveness and effectiveness indicators are again not conclusive and do not show improvement with higher development categories or with the existence of national and local legislation for DRM. This again demonstrates challenges in the reporting process in general and in subjective, qualitative, self-assessment in particular.

HDI	legislation/ regulation for DRM ²	local legislation ²	voice and accountability ³	Participation in national platform ⁴	Inclusiveness ⁵	Effectiveness (Incorporation into national plans) ⁶
Very High	1.00	0.83	1.16	2.3	0.33	0.67
High	1.00	0.67	-0.64	2.6	0.33	0.92
Medium	0.67	0.67	-0.40	1.6	0.5	0.79
Low	0.60	0.20	-1.00	3	0.2	0.75

Notes:

1. HDI Category score is obtained by averaging the national scores for countries in each development category.
2. Countries having legislation / regulation for DRM score 1, while those without such legislation score 0. The same scoring is adopted for local legislation.
3. Voice and accountability obtained from the world bank database set providing average of different governance indicators. It ranges from a worst score of -2.5 to a best score of +2.5.
4. Scoring for participation in national platform is obtained by adding the total number of categories represented (there is a maximum possibility of six categories: CSO, National finance and planning, sectoral, private sector, academic and gender).
5. Inclusiveness score is based on whether Gender based issues are addressed in the recovery process, with a yes answer scoring 1 and a no / unknown answer scoring 0.
6. Effectiveness scoring is based on the ability of governments to incorporate DRM considerations into national plans and strategies. The score is obtained by adding the total number of national polices where DRM has been incorporated (there is a maximum possibility of a score of four corresponding to incorporation of DRM within national development plans, sectoral development plans, climate change and poverty reduction).

Table 10 Effect of Development Situation on Governance and Risk Governance

6 Discussion

The analysis showed trends of improving progress with improving development category, with less clear and understandable trends for parameters related to success of strategies and policies in effecting DRM change). In order to develop targets and indicators capable of measuring the success in effecting DRM change, it is proposed that the indicators are developed to assess progress under different risk governance stages. In particular, indicators for participation, inclusiveness, accountability and effectiveness must be developed for each risk governance stage, as shown in Table 11, based on definitions given in **Error! Reference source not found.** and Table 12, reproduced from the background paper (Hamdan, 2013) and references therein [(Williams, 2013) and (IRGC, 2005)].

Risk Governance Stage	Participation in decision making process	Accountability of Decision making process	Inclusiveness of Decisions	Effectiveness
Pre-Assessment Stage:	Various stakeholders, including representatives from vulnerable sectors, livelihoods and communities included in decision making process?	Mandates for risk pre-assessment separate and clear?	Outcome of decisions in terms policies, strategies and action plans specifically and explicitly address gender variations in vulnerability and losses?	Are resources allocated to implement strategies and policies?
Technical and Social Assessment Stage:	Various stakeholders, including representatives from vulnerable sectors, livelihoods and communities included in decision making process?	Mandates for technical and societal risk assessment separate and clear?	Outcome of decisions in terms policies, strategies and action plans specifically and explicitly address gender variations in vulnerability and losses?	Are resources allocated to implement strategies and policies?
Evaluation Stage:	Various stakeholders, including representatives from vulnerable sectors, livelihoods and communities included in decision making process?	Mandates for evaluation stage separate and clear?	Outcome of decisions in terms policies, strategies and action plans specifically and explicitly address gender variations in vulnerability and losses?	Are resources allocated to implement strategies and policies?
Management Stage:	Various stakeholders, including representatives from vulnerable sectors, livelihoods and communities included in decision making process?	Mandates for management stage separate and clear?	Outcome of decisions in terms policies, strategies and action plans specifically and explicitly address gender variations in vulnerability and losses?	Are resources allocated to implement strategies and policies? Is there a positive impact in reduction of extensive / intensive losses?
Communication Stage:	Various stakeholders, including representatives from vulnerable sectors, livelihoods and communities included in decision making process?	Mandates for two-way risk communication separate and clear?	Outcome of decisions in terms policies, strategies and action plans specifically and explicitly address gender variations in vulnerability and losses?	Are resources allocated to implement strategies and policies?

Table 11 Proposed Indicators for measuring success of effecting DRM change, particularly in the governance sphere

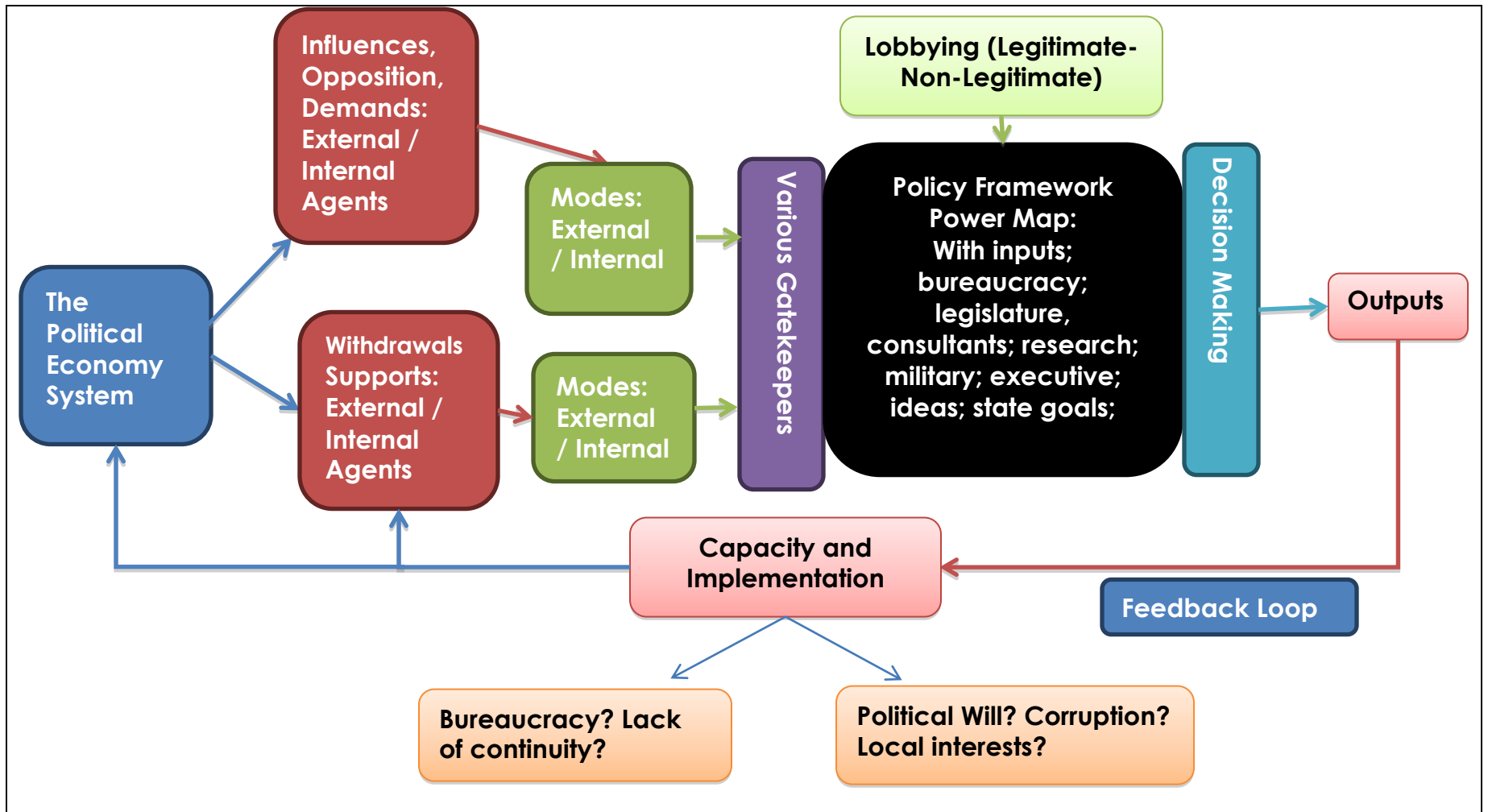


Figure 7 The Political-Economy Framework for Understanding and Analysing Drivers of Change

Risk Governance Stage	Description
Pre-Assessment Stage:	This stage frames the risks, identifies the perspectives of various stakeholders on risks and the major assumptions and methodologies for assessing the risk, through a four step process: 1. Risk framing which underlines a common understanding of risk, 2. Early warning and monitoring of risks, 3. Risk pre-screening models and practices and corresponding capability requirements, and finally, 4. Selection of major assumptions, methods, conventions and procedural rules for assess the risk and associated societal concerns. The nature of the decision making process within any political economy, as elaborated in political economy analysis framework shown in Figure 7, will play an important role in determining the outcome of this stage. For example, in some cases vested interests may influence gatekeepers to prevent risk signals arising from certain economic activities from being recognized. In addition, risks may be wrongly perceived to have local rather than national consequences. In addition, the views of certain stakeholders (e.g. those living in resource rich regions or in urban slums) may be ignored.
Technical and Social Assessment Stage:	This stage comprises both a scientific risk assessment (hazard frequency, exposure and consequences); and a societal concern assessment (including associations, societal benefits and risks) which must inevitably account for gender considerations. A flawed decision making process may lead to scarcity in collating and analyzing data and / or misuse of such data regarding a particular risk (related to both scientific assessment and societal concerns). It may also lead to inadequate addressing of societal and stakeholder concerns.
Evaluation Stage:	This stage is intended to ensure that evidence based on scientific facts is combined with societal values considerations when judging the tolerability of risk according to three main categories: i) Acceptable where further risk reduction is considered unnecessary; ii) Tolerable where the level of risk may be acceptable due to its benefits, but subject to appropriate risk reduction measures and considerations; and Intolerable where the level of risk must be reduced, irrespective of cost. A flawed DRR decision making process may lead to a lack of agreement and sufficient discussion on the value of saving a human life (which is at the core of the tolerability judgment). It may also lead to inadequate attention given to societal concerns regarding the issue of multiple fatalities
Management Stage:	All tolerable risks will need balanced and adequate risk management practices (comprising compensatory, prospective and corrective approaches) and financing strategies for risk reduction (comprising retain and reduce, insure or transfer the risks). A flawed DRR decision making process may lead to i) an underestimation of the benefits of various risk reduction measures, ii) a delineation of responsibilities as to the entity responsible for managing the risk, iii) a lack of regulatory mechanisms for allocating resources and ensuring implementation, iv) a focus on compensatory or prospective approaches without sufficient emphasis on corrective risk reduction, v) a focus on risk insurance of transfer without sufficient emphasis on risk retention and reduction.
Communication Stage:	Communication and coordination with all stakeholders is implicit to all stages within the risk management framework. Furthermore, once the risk management decision is made, communication should explain the rationale for the decision and allow citizens / stakeholders to make informed choices about the risk and its management, including their own responsibilities. A flawed DRR decision making process may result in i) a one-way rather than two-way information sharing process, ii) communication, participation and coordination not being commensurate to the risk level and risk category, iii) communication may be wrongly used as a substitute to the collation of stakeholders' perceptions of acceptable and intolerable risks.

Table 12 Salient Features of the Risk Governance Framework

Furthermore, there is a need to measure the inequality of risk within societies and countries and link it to variations in the achievement of the MDGs within countries. In this manner it becomes possible to devise more effective strategies to link development with DRM and CCA initiatives and considerations.

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