Building Capacity for Reducing Loss & Damage by Natural Hazards

A Guidance Manual for Good Practices

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Centre for Global Sustainability Studies
Universiti Sains Malaysia

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Building Capacity for Reducing Loss and Damage by Natural Hazards:

A guidance manual for good practices

Disaster Risk Management

Sustainable Development

Capacity Building

Risk Reduction

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PREFACE

This book represents a guidance manual for good practices in the preparation of impending disasters by ways of promoting mitigation and risk reduction measures. As climate change is inevitable and the effect is expected to increase every year, we have to formulate ourselves in dealing with cost of disasters in terms of the lives lost and the damages to the social, economic and environmental assets.

As one of the formulation measures, Centre for Global Sustainability Studies (CGSS), Universiti Sains Malaysia in collaboration with the Asia Pacific Network for Global Change Research (APN), Japan; International University, Vietnam National University (Vietnam); National University of Laos (NUOL) and University of Batambong (Royal of Cambodia) conducted hands-on training workshops for three days in Malaysia, Vietnam, Laos and Cambodia. We collate our resources to prepare a training curriculum to explain the DRM cycle in these four countries. In this training, the participants use the DRM-cycle to suit the capacity needs of the target groups in each country, whether their primary focus is pre-event risk management or post-event disaster management. At the end of every workshop, we have received many good reviews of the training from all the participants. As a result, it would be a proper purpose for us to have our experiences in the training to be well documented, thus, the guidance manual.

In this manual, we compiled all the documentations and references used in the training. We hoped this guidance manual will assist in addressing the climate change issues by connecting

risk to climate impact, vulnerability of exposure units and the role of adaptation in enhancing capacity to address risks to all interested parties.

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Systainability Asia, AtKisson Group International, Thailand

Philippines

Far Eastern University

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1.0 INTRODUCTION

Climate change is projected to increase in frequency, intensity and the cost of disasters in terms of the lives lost and the damages to the social, economic and environmental assets. A prudent approach would involve a host of pre-disaster win-win early adaptation interventions, making recovery faster and loss & damage manageable. If this is coupled with well-conceived response and recovery measures aligned to long-term interests of national development, each iteration of the DRM-SD cycle will improve risk reduction and resilience building. In order to bridge the gap between the *event* and the *process* based approaches and to integrate DRR with sustainability, there needs to be strong policy guidelines. This is highlighted both in the *Hyogo Framework for Action 2005-2015's* strategic goal that relate to 'the integration of disaster risk reduction into sustainable development policies and planning', and paragraphs 186-189 under the sub section 'disaster risk reduction' of the Rio+20 outcome 'The future we want'. The lack of integration in this area is the policy issue we propose to address.

In Southeast Asia region, the temperature increase is for ~ 1.0^{o}C per century with a projected rise of 3-4^{o}C under RCP 8.5 (Representative Concentration Pathway). The 'wetter region gets more wetter and drier gets more drier' (i.e. more 'warmer' and 'wetter' weather); extreme weather & climate events will become more

frequent; extreme precipitation events over wet tropical regions will *very likely* become more intense and more frequent; there is high confidence that ENSO will remain the dominant mode of interannual variability in the tropical Pacific and due to the increase in moisture availability ENSO-related precipitation variability on regional scales will *likely* intensify and finally the sea level is projected to rise between 0.4-0.6 m and oceans are becoming more acidic.

In order to reduce the impact of climate disasters, therefore, the best time to intervene is at the risk level using a variety of measures as shown in Figure 1. While mitigation, adaptation and readiness will progressively reduce the risk from R1 to R3, relief, restoration and sustainable development approaches will be needed to increase the scope and pace of the post disaster interventions – enhancement of resilience - from D2 to D4. In general, emergency management is a nonstop process which involves four major steps: prevention, preparedness, response and recovery, with targeted tasks under each of these phases.

If we define risk more inclusively to cover both 'rapid onset-high impact' events such as floods and heat waves, and 'slow onset- high impact' events, such as climate change and poverty, we are in a position to relate DRM to SD. For example, we are in an advanced stage of *risk* as far as global climate change is concerned, and we are bordering on *disaster* stage for impacts and vulnerabilities of natural resources and biological diversity due to these changes. It is this risk that needs to be

characterized and managed urgently, instead of waiting to settle all the arguments about uncertainties before taking action.

Prudent and proactive emergency management calls for making consistent efforts before, during and after a disastrous event happens. According to UNEP, hazard + vulnerability = risk while, UN ISDR uses the relationship, hazard x vulnerability/capacity = risk, to address the same situation. In both these cases, 'realized risk is disaster'. The training curriculum is developed thus to clearly explain the DRM cycle to suit the capacity needs of the target groups whether their primary focus is pre-event risk management or post-event disaster management. It is against this background the sections *3.1-3.3* are developed.

Centre for Global Sustainability Studies (CGSS), Universiti Sains Malaysia in collaboration with the Asia Pacific Network for Global Change Research (APN), Japan; International University, Vietnam National University (Vietnam); National University of Laos (NUOL) AND University of Batambong (Royal of Cambodia) conducted an in-country 'learning labs' (training workshops) for three days in Malaysia, Vietnam, Laos and Cambodia. This training is intended to bring together multiple stakeholders to explore ways to reduce the risk posed by climatic hazards before they are realised as disasters resulting in loss and damage.

The central focus of this unique training is personalised instruction and hands-on learning. The training considered such an approach by factoring sustainable development (SD) considerations in all the four major phases of the DRM loop – Prevention, Preparedness, Response and Recovery. This is the uniqueness of the training. Thus, this training is tailored to address closely the capacity needs of APN's Climate Adaptation Framework 2012, and the outcome of the special APN workshop on CCA, DRR & L+D' Kobe, 21-23 August 2013.

The training hope to address these issues by connecting risk to climate impact, vulnerability of exposure units and the role of adaptation in enhancing capacity to address risks. The thrust will be on ways to progressively reduce risk to acceptable levels; levels which if realised as disaster will be within the capacity of the communities to manage without very adverse loss and damage. The involvement of four universities, government and private sector disaster managers, and the community groups makes it a proactive engagement than the 'event based reactive approach of the present. Thus, strengthening partnerships, risk reduction project development, specialised

capacity building, documenting current approaches and recommending better approaches for improved policies are integral to the training.

The three-day workshop addresses all technical terms involved in the Disaster Risk Management (DRM) cycle, clearly explain the connection between DRM and Sustainable Development (SD), train participants on the use of an easy to use Risk Assessment Methodology (R.A.M developed by CGSS), expose them to loss and damage assessment approaches, help prioritise adaptation options, and train them on risk reduction project planning using Logical Framework Analysis (LFA) & Atkissons Methodology (developed by AtKisson Group) to develop and implement interdisciplinary risk reduction projects. The backdrops of discussions were the Hyogo Framework and the Future We Want.

THE HIGHLIGHTS

The highlight of the Training Curriculum involves:

- Discussion of SE Asian climate trend and scenario with focus on climatic extremes.
- Definition of terms, risk equations, disaster trends, climate change and disasters, population, urbanization and DRM, Malaysia and DRM.
- DRM-SD cycle – Risk management side (before the event) – Prevention and Preparedness; the role of mitigation, adaptation and readiness; the role of science and technology for DRM.
- DRM-SD cycle – Disaster management side (after the event) – Response and recovery; the role of relief, restoration and recovery; closing the loop for resilience building, especially for the most vulnerable; sustainable living and human well-being.

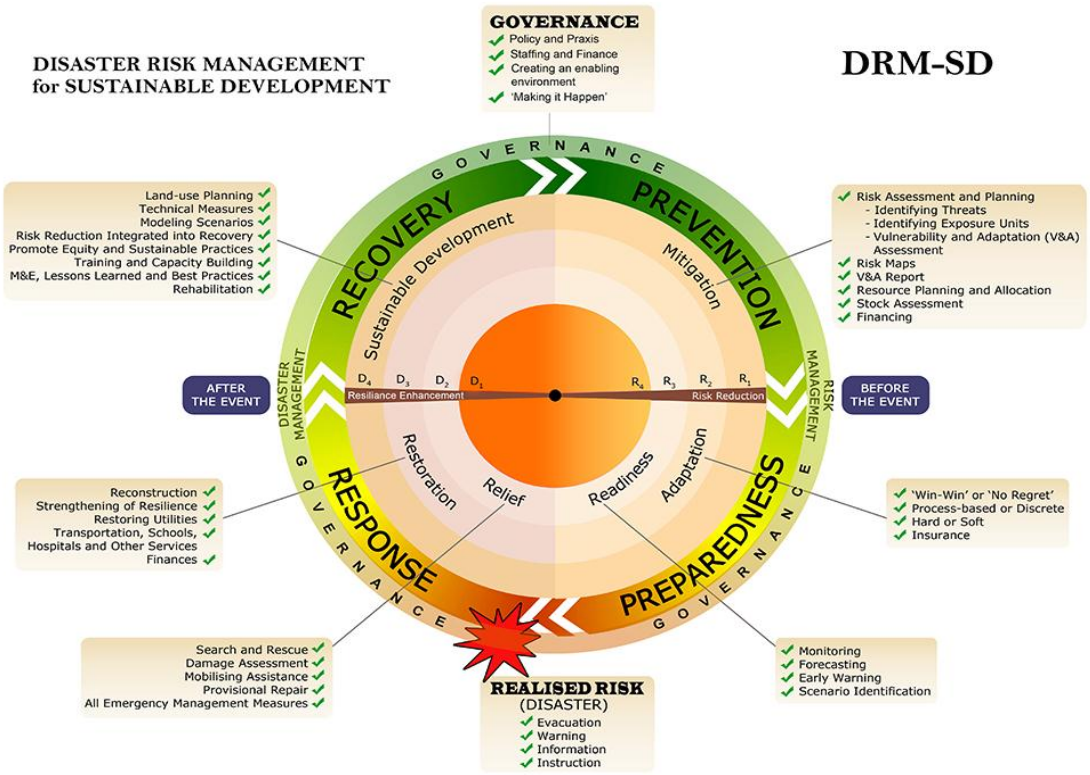
2.0 OUR APPROACH

2.1 The DRM-SD Model

Figure 1 presents the DRM-SD Model, which represents a cyclic and iterative process where 'risk reduction' and 'resilience enhancement' are given equal importance. These are the pre and post disaster activities (shown as radii of the right and left hemispheres). It is assumed that the radius of the right hemisphere represents the full risk and that on the left, the full disaster. The key to the successful implementation of the model is the ability to progressively reduce risk through mitigation (R1), adaptation (R2) and readiness (R3) measures carried out 'before the event' under prevention and preparedness. The residual risk is shown by R4 which when realized as disaster (D1) is presumably small and manageable. The post disaster activities relief (D2), restoration (D3) and sustainable development (D4) will enhance resilience (reduced disaster) under response and recovery phases. The governance segment is the ever present enabling environment required for the other four components to operate efficiently. The checklist items shown outside the circle in pockets are examples of activities that form part of DRM-SD. This model requires that we move from an 'event-based' to a SD compatible 'process-based' approach for improved results. In this approach, the overall risk (in the absence of any risk reduction measures) will be progressively reduced to a level where any resulting disaster from the residual risk will be considered manageable. This becomes more evident if we imagine a horizontal slizing of the DRM-SD cycle which will leave both 'preparedness and response' close to the event and 'recovery and prevention' away from the event. While hastily put-together 'preparedness and response' surrounding the disaster event may be likened to *reactive* sustainability

measures, a more *proactive* response aligned to sustainability vision will be the 'recovery and prevention' father away from the event.

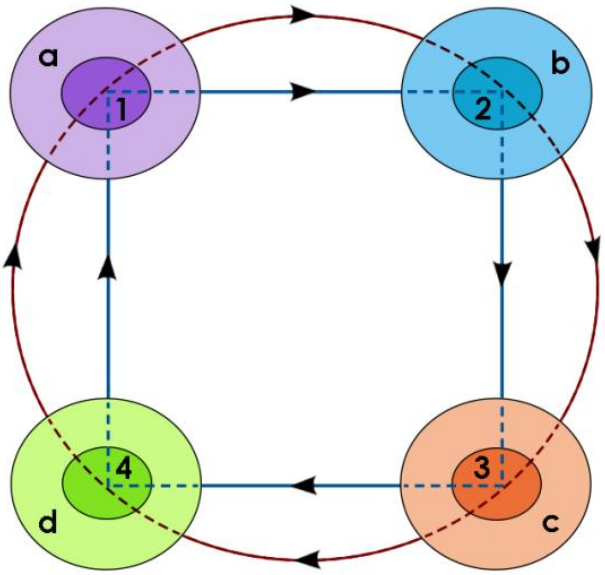
Figure 1: DRM-SD Model developed by CGSS



We believe that if these principles and new approach are adopted and practiced over the long term, a sustainable pathway can be found for all nations. As disasters are seen as realized risk, this approach requires pre-emptive action through sustainability compatible interventions.

Thus the novelty of DRM-SD is that it prompts strategic intervention at the risk level to continue reduce multiple risks posed by SD challenges to levels manageable by people and planet alike through mitigation and adaptation. This approach will require us to take no-regret measures, while simultaneously intensifying efforts on more involved mitigation challenges that will require policy, finance and mind-set changes.

2.2 DRM-SD Cycle and World Café Approach



This is a practical approach to manage break-up group (stakeholder) discussion, very effectively during formally organised conferences/meetings. Let us consider a DRM-SD conference of 40 people whose focus is to discuss the four pillars of the DRM-SD model – Prevention (Prev), Preparedness (Prep), Response (Resp) and Recovery (Reco) – the 2Ps & 2 Rs – which are called the independent variables in this case. This number (4) decides the number of discussion locations or 'Tables' to be set up. This is shown in Fig Y1 by the bigger of the two concentric circles a, b, c & d. The smaller inside circles labelled 1, 2, 3 & 4 represent a pair (two people) consisting of a moderator (or host) and a scribe (a person to record and summarise the discussion) at each table. In this format of cycle 1, round 1 begins as shown in the diagram with table Prev discussing all aspects of prevention; table Prep, preparedness; and table Resp, response; and table Reco, recovery topics. Each table will consider as much of their table topic as possible; for e.g. Prev might consider, environment (rivers, drainage, agriculture), society (health, housing, education), economy (industry, business/trade, infrastructure) and governance (standard operating procedures (SOP), policy/action plan, finance aspects of flood disaster prevention. The preparedness group will discuss along the same line but from a preparedness angle. The same logic applies to the response and recovery table as well. Because it is the first time the groups are discussing sub-topic, let's say they take 60 minutes

for round 1. The groups get up and move to the nest table in a clock-wise direction. While this happens, the facilitator and the scribe do not move – they remain on the same table all along. After the move has been completed, round 2 begin and proceed along the same direction. Because each table topic has been discussed initially for 1hr by the previous group, in round two only 40 minutes may be enough. Everybody is contributing to value addition to what has already been said or filling gaps. At the end of 40 minutes, round 3 begins and then after another 40 minutes round 4 begins and ends after 40 minutes. The advantage of this change of configuration and mode of discussion is that everyone gets to express their views on all four cycle themes and in between there is some physical activity too – getting up, moving etc. – that minimises fatigue. The moderator and scribe who have been stationary and the repository for all the discussion details will report to the plenary a summary of the overall discussion finally.

This pattern works very well for smaller groups. If the plenary has 80 people, each of the table could have a repeat table (overall 8 tables then) and so on. If the group is still bigger, say 240 people, still we can conduct world café to give everyone the chance to discuss all the four thematic areas. In this case we need to have bigger groups. Say we divide 240 into four groups of 60 and each further down to 30+30 – the duplex arrangement. The fundamental difference here is that the group members will stay put while the moderator teams will rotate clockwise. Like before, each moderator will be responsible for Prev, Prep, Resp and Reco and regardless of which group they are with; their assigned subgroup theme will remain with them and be discussed.

A similar approach may be used for even larger groups, say 500 people and five thematic areas to be discussed. The group could be divided into 5 groups of 100 and each 100 further

divided to 50+50 in a duplex mode. Thus there will be 10 separate groups of 50 people each who will stay put and moderator and scribe will keep moving. Following a major flood in Kelantan, north eastern Malaysia, we did conduct such a world café very successfully; just that we needed to make careful planning for grouping, electronic display of discussion progress etc.

2.3 Logical Framework Analysis (LFA)

Logical Framework Analysis (or Approach) (LFA) is an approach to develop well analysed and logical project framework and activities in order to plan and implement risk reduction projects and, for that matter any project at all. LFA thinking is usually presented as a logical framework (logframe or project structure) which is a matrix of rows and columns that shows a summary of the project design, activities and the indicators used to measure progress. In short, LFA is an instrument for objective-oriented planning, rigorous sound design and practical implementation of projects. As LFA is an 'aid to thinking' and is user driven, it has widespread and diverse applications, and it is flexible enough to accommodate the needs of projects regardless of their size and scope. The systematic application of the method, with good judgment and sound common sense, can help to improve the quality, and hence the output, relevance, feasibility and sustainability of project implementation in general.

By bringing stakeholders together to discuss problems in all its dimensions, set objectives and strategies for action, LFA encourages people to consider issues in detail, frame achievable expectations, and evaluate means of implementation. By stating objectives clearly and setting them out in a 'hierarchy of objectives' (organized as a 'cause-effect'

decision points in LFA, this is called a ‘Problem Tree and through a ‘means-end’ approach, an ‘Objective Tree’ is also constructed), the logframe matrix that results thus provides a means of checking the internal logic of the project plan, and ensures that activities, results and objectives are linked. It also forces planners to identify the critical assumptions and risks which may affect project success, thus encouraging a discussion on project feasibility. In stating indicators of achievement and means of measuring progress, planners are made to think about how they will monitor and evaluate the project right from the start. A clear identification of the activity schedule is also the basis for a well-thought out budget or resource schedule. All these key information is brought together in a single document – the logframe – which provides a useful and visible project summary.

The approach presented here, is not an end in itself, instead it is to be seen as a user-driven and objective-led project planning process which uses specific terms that help visualize and implement projects more successfully. Very often formal training will be required to fully benefit from the LFA methodology (Logframe for a non-performing restaurant).

2.4 System Thinking Approach

System thinking is a process of understanding how those things which may be regarded as systems influence one another within a complete entity, or larger system. In nature, systems thinking examples include ecosystems in which various elements such as air, water, movement, plants, and animals work together to survive or perish. In organizations, systems consist of people, structures, and processes that work together to make an organization "healthy" or "unhealthy".

Systems Thinking is seeking to understand the connections among elements in a system; what depends on what, what is causing what, where are information flows, where control decisions are made, what information flows are critical, and how best to manage or intervene in the system for desired results. The field of systems thinking has generated a broad array of tools that: (1) graphically depict the understanding of a particular system's structure and behaviour, (2) communicate with others about the understandings of the system; (3) design high-leverage interventions for problematic system behaviour. Systems Thinking also helps to move the focus away from events and patterns of behaviour (which are symptoms of problems) and toward systemic structure and the underlying mental models.

Systems thinking have been defined as an approach to problem solving that attempts to balance holistic thinking and reductionistic thinking. By taking the overall system as well as its parts into account systems thinking is designed to avoid potentially contributing to further development of unintended consequences. There are many methods and approaches to systems thinking (what systems thinking researchers call a "pluralism"). For example, the Water's Foundation presents that systems thinking is not one thing but a set of habits or practices within a framework that is based on the belief that the component parts of a system can best be understood in the context of relationships with each other and with other systems, rather than in isolation; and that systems thinking focuses on cyclical rather than linear cause and effect. Whereas, other models characterize systems thinking quite differently. Recent scholars, however, are focused on the "patterns that connect" this pluralism of methods, this search for universal patterns that cut across the pluralism of individual methods of systems thinking is called "universality."

2.5 Atkisson Compass

Although World Café and Mind Maps are effective ways to bring out the varied views and opinions of the groups involved, the results might still look compartmentalised, without much emphasis on inter-relationships or interdisciplinarity. We need a way, therefore, to connect the dots among the discussion topics. This is where Atkissons compass becomes an important tool.

The Sustainability Compass ("Compass" for short) is a tool for orienting people to sustainability. Compass helps you bring people together around a common understanding of sustainability, and a shared vision for getting there. It also helps you monitor progress along the way. First developed in 1997, the Sustainability Compass has been used by companies, communities, organizations, schools and universities around the world.

The Sustainability Compass is easy to understand. A regular compass helps us map the territory and find our direction. This Compass does the same thing for sustainability. It takes the English-language directions — North, East, South, West — and renames them, while keeping the same well-known first letters:

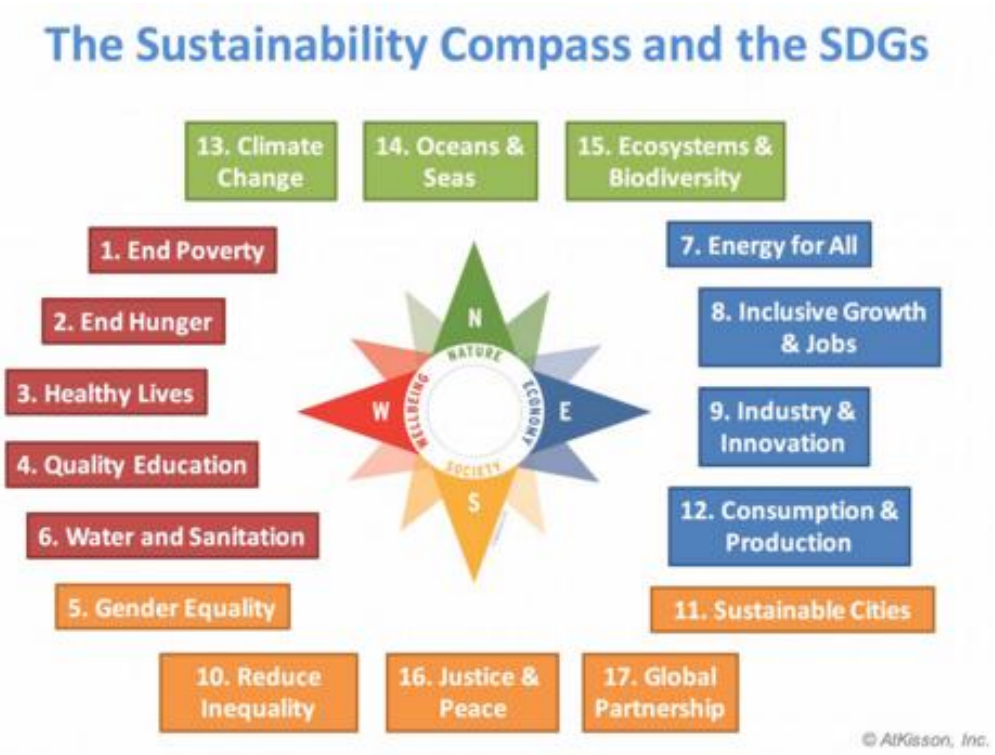
N is for Nature – All of our natural ecological systems and environmental concerns, from ecosystem health and nature conservation, to resource use and waste.

E is for Economy – The human systems that convert nature's resources into food, shelter, ideas, technologies, industries, services, money and jobs.

S is for Society – The institutions, organizations, cultures, norms, and social conditions that make up our collective life as human beings.

W is for Wellbeing – Our individual health, happiness, and quality of life.

Those four categories were developed by prominent sustainability theorists. The fact that these four words line up with the four directions of a compass was a happy coincidence, noticed in 1997 by Alan AtKisson while he was participating in an international seminar on sustainability indicators. He and his colleagues later developed the Compass idea into a complete set of tools, and since then, the Sustainability Compass has been spreading around the world. Compass has been used in very many diverse situations, ranging from corporate board rooms to indigenous community programs. The Compass can also be used to understand the major areas of focus by analyzing the 17 Sustainable Development Goals (SDGs) into the four thematic directions and establishing their interconnectivities.



People use the Sustainability Compass (and related tools developed by the AtKisson Group) to: a) Explain sustainability in clear, simple language, b) Teach sustainability and sustainable development, in a whole-system way, c) Provide a unifying symbol for sustainability and sustainable development programs, d) Convene stakeholders and manage their involvement in sustainability initiatives, e) Develop sustainability indicators and reports for organizations, companies, cities, etc. and f) Perform sustainability assessments and gap analyses for corporations.

3.0 TRAINING MATERIALS

DAY 1

DEVELOPMENT WITH A DIFFERENCE by Prof. Dr.Kamarulazizi Ibrahim

Principles and Concepts: Economic Development

- What is the real meaning of development?
- How can one apply economic concepts and theories to gain a better understanding of development process?
- Why do some countries develop and others remain poor?

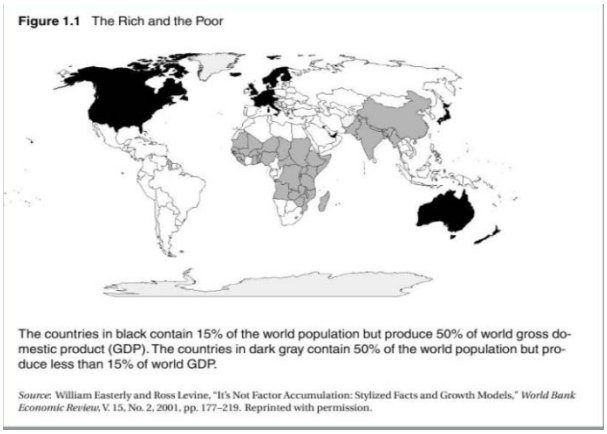


Figure 1.1 The Rich and the Poor

The countries in black contain 15% of the world population but produce 50% of world gross domestic product (GDP). The countries in dark gray contain 50% of the world population but produce less than 15% of world GDP.

Source: William Easterly and Ross Levine, "It's Not Factor Accumulation: Stylized Facts and Growth Models," *World Bank Economic Review*, V. 15, No. 2, 2001, pp. 177–219. Reprinted with permission.

- What are the sources of development and how do we measure development?
- Does historical record of development help us understand it better?
- What are the most influential theories of development and are they compatible?
- Is development process of developing nations independent or interdependent with that of developed nations?

Definitions of Development

- For almost every writer a different definition of development exists
- Important to first distinguish between:

- Development as a state or condition-static

- Development as a process or course of change- dynamic

- In economic terms, development is the capacity of a nation to generate and sustain an annual increase in its GNP of 5% or more.

- Traditional economic measures:

  - **GDP**: is the market value of all final goods and services produced within a country in a given period of time

  - **GNP**: is the market value of all final goods and services produced by permanent residents of a country in a given period of time

    GNP= GDP+ net factor income from abroad

  - Common alternative index is the rate of growth of income per capita or per capita GNP

    - **Per capita GNP**: is the per-head value of final goods and services produced by permanent residents of a country in a given period of time. It is converted to USD using the current exchange rate.
    - **PPP Measure**: the number of units of a country's currency required to purchase the same of basket of goods and services in the local market that a US $1 would buy in the USA. Under PPP, exchange rates should adjust to equalize the price of a common basket of goods and services across countries. Penn World Tables rank countries using the PPP method.

The hamburger standard

	Big Mac prices		Implied PPP* of the dollar	Actual dollar exchange rate 23/04/02	Under(–)/over(+) valuation against the dollar, %
	in local currency	in dollars			
United States‡	$2.49	2.49	–	–	–
Argentina	Peso 2.50	0.78	1.00	3.13	-68
Australia	A$3.00	1.62	1.20	1.86	-35
Brazil	*Real* 3.60	1.55	1.45	2.34	-38
Britain	£1.99	2.88	1.25†	1.45†	+16
Canada	C$3.33	2.12	1.34	1.57	-15
Chile	Peso 1,400	2.16	562	655	-14
China	Yuan 10.50	1.27	4.22	8.28	-49
Czech Rep	Koruna 56.28	1.66	22.6	34.0	-33
Denmark	DKr24.75	2.96	9.94	8.38	+19
Euro area	€2.67	2.37	0.93§	0.89§	-5
Hong Kong	HK$11.20	1.40	4.50	7.80	-42
Hungary	Forint 459	1.69	184	272	-32
Indonesia	Rupiah 16,000	1.71	6,426	9,430	-32
Israel	Shekel 12.00	2.51	4.82	4.79	+1
Japan	¥262	2.01	105	130	-19
Malaysia	M$5.04	1.33	2.02	3.8	-47
Mexico	Peso 21.90	2.37	8.80	9.28	-5
New Zealand	NZ$3.95	1.77	1.59	2.24	-29
Peru	New Sol 8.50	2.48	3.41	3.43	-1
Philippines	Peso 65.00	1.28	26.1	51.0	-49
Poland	Zloty 5.90	1.46	2.37	4.04	-41
Russia	Rouble 39.00	1.25	15.7	31.2	-50
Singapore	S$3.30	1.81	1.33	1.82	-27
South Africa	Rand 9.70	0.87	3.90	10.9	-64
South Korea	Won 3,100	2.36	1,245	1,304	-5
Sweden	SKr26.00	2.52	10.4	10.3	+1
Switzerland	SFr6.30	3.81	2.53	1.66	+53
Taiwan	NT$70.00	2.01	28.1	34.8	-19
Thailand	Baht 55.00	1.27	22.1	43.3	-49
Turkey	Lira 4,000,000	3.06	1,606,426	1,324,500	+21
Venezuela	Bolivar 2,500	2.92	1,004	857	+17

Sources: McDonald's; *The Economist*

*Purchasing-power parity: local price divided by price in United States
†Average of New York, Chicago, San Francisco and Atlanta
‡Dollars per pound §Dollars per euro

Comparison of GNP:

	GNP Per Capita (US $)	
Country	Exchange rate	PPP
UK	24,500	23,550
USA	34,260	34,260
Zimbabwe	480	2,590
Bangladesh	380	1,650
China	840	3,940
India	460	2,390
Sri Lanka	870	3,470

- Dethronement of GNP in the 1970s and increasing emphasis on “redistribution from growth”
- Increasing emphasis on non-economic social indicators
- Economic development consists of the reduction or elimination of **poverty**, **inequality** and **unemployment** within the context of a growing economy.

Human Goals of Economic Development : Sen’s “Capabilities” Approach: 1985

- Economic growth is not an end in itself and has to enhance the lives people lead and the freedoms that they enjoy
- Capability to function is what matters for status as a poor/non-poor person and it goes beyond availability of commodities
- Capabilities: “freedom that a person has in terms of the choice of his functionings,…”
- Functionings is what a person does with commodities of given characteristics that they possess/control
- The concept of functionings reflects the various things a person may value doing
- Therefore, development cannot focus only on income, but we also need to look at other factors impacting a person’s capability to function.
- Amartya Sen traced five sources of disparity between real incomes and actual advantages:
- Personal heterogeneities

- Environmental diversities
- Social climate variations
- Differences in relational perspectives
- Distribution within family

Definition of Economic Development: 1990s

- World Bank in its 1991 WDR asserted that the “challenge of development is to improve the quality of life.”
- The improved QOL involves higher incomes, better education, higher standards of health and nutrition, less poverty, a cleaner environment, more equality of opportunities, greater individual freedom, and a richer cultural life.
- Economic factors
    - capital
    - Labor
    - Natural resources
    - technology
    - established markets (labour, financial, goods)
- Non-economic factors (institutional, social, values)
    - attitudes toward life and work

- public and private structures
- cultural traditions
- systems of land tenure, property rights
- integrity of government agencies

Meaning of Development-Todaro

- Development is not purely an economic phenomenon but rather a multi-dimensional process involving reorganization and reorientation of entire economic AND social system
- Development is process of improving the quality of all human lives with three equally important aspects.

Todaro's Three Objectives of Development

1. Raising peoples' living levels, i.e. incomes and consumption, levels of food, medical services, education through relevant growth processes.
2. Creating conditions conducive to the growth of peoples' self-esteem through the establishment of social, political and economic systems and institutions which promote human dignity and respect.
3. Increasing peoples' freedom to choose by enlarging the range of their choice variables, e.g. varieties of goods and services.

- Development as Modernization- emphasizes process of social change which is required to produce economic advancement; examines changes in social, psychological and political processes;
- How to develop wealth oriented behavior and values in individuals; profit seeking rather than subsistence and self sufficiency
- Shift from commodity to human approach with investment in education and skill training
- **Development as Distributive Justice-** view development as improving basic needs
- Interest in social justice which has raised three issues:

    1.Nature of goods and services provided by governments

    2. Matter of access of these public goods to different social classes

    3. How burden of development can be shared among these classes

- Target groups include small farmers, landless, urban under-employed and unemployed

Definition of Economic Development: Conclusion

"Development is a multi dimensional process involving changes in social structures, popular attitudes, and national institutions, as well as the acceleration of economic growth, the reduction of inequality, and the eradication of poverty." (Todaro and Smith)

- Development is both a physical reality and a state of mind for attaining a better life.
- Three basic core values as a practical guideline for understanding development

- Sustenance
- Self-esteem
- Freedom

- Specific components of better life vary from time to time and from society to society.
- Three Objectives of Development:
    - Increase availability and distribution of basic goods
    - Raise levels of living
    - Expand range of social and economic choices available to individuals

Human Development Index

- Initiated in 1990 and undertaken by UNDP in its annual series of HDRs.
- HDI is based on 3 goals:
    - Longevity
    - Knowledge
    - Standard of living
- HDI= 1/3(Income index)+1/3(Life expectancy index)+1/3(education index)
- Ranks 175 countries into 3 groups
    - Low human development = 0.00-0.099

- Medium human development = 0.5-0.799
- High human development = 0.80-1.00

Country	HDI	GDP rank-HDI rank
Low HD: Tanzania	0.436	+21
Medium HD: Turkey	0.735	-21
High HD: Canada	0.936	+3

Sustainable Development vs. Sustainability

- Sustainability is the capacity to endure. For humans it is the potential for long-term health and wellbeing, which in turn depends on the wellbeing of the natural world and the responsible use of natural resources.
- Sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." There are many definitions of sustainable development, but this is the one that is most frequently used. It contains two key concepts:
    - the concept of needs, in particular the essential needs of the world's poor, to which…priority should be given; and

- the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs.

Sustainable Development

Sustainable development (SD) or sustainability is the imperative of the 21st century.

1. Sustainability - Protecting our planet, lifting people out of poverty and advancing economic growth are interconnected aspects of the same principle

2. The current developmental paradigm that puts considerable pressure on natural resources, resulting in environmental degradation, change climate and widening of the gap between the poor and rich further, is simply not sustainable.

3. Developed countries will continue efforts to sustain their living standards and maintain economic growth, developing countries are on a fast track to become 'developed'

4. Pursue a new way of building resilience to avoid undesired outcomes in the future through reducing current risks posed by human actions that are changing significantly Earth and its environment.

5. Define risk more inclusively to cover both 'rapid onset–high impact' events such as floods and heat waves, and 'slow onset–high impact' events such as climate change and poverty, which are sustainability challenges.

Approach

1. Disaster risk management (DRM) will be used to show the difference between the traditional approaches used in the past/present and the new model we propose to support SD globally.

2. In the new model we integrate the usual four components of DRM– prevention, preparedness, response and recovery – to meet the needs of SD.

3. In most developing countries, conventional disaster management is limited to event-based reactive engagements, while proactive disaster management calls for stronger preparedness and response measures.

neo-DRM

The 'neo-DRM' will strengthen the prevention and recovery components of DRM, including the cost-effective and win-win measures.

This could involve a host of country- specific activities such as

1. community-based resilience building towards disasters,

2. efficiency improvements in energy and water use, fisheries and land use through training and capacity enhancement,

3. process-based approaches to mitigation and risk sharing,

4. Technology-assisted early warning systems, better public transport, improved hydro-met services, smart policies and innovative implementation through public–private partnerships for multiple pilots and scaled-up projects.

5. Integrated SD policies for development planning and protection of coastal cities, flood plains, estuaries, forests and national biodiversity.

* In the absence of anticipatory action, these risks will get harsher as the population grows, the worldwarms and global environmental changes accelerate. Any and all proactive measures to ameliorate the adverse impacts of these events will help greatly in managing their potential risks towards a more sustainable future.

Combining mitigation, adaptation and readiness as pre-disaster risk-reduction measures, and post-disaster measures such as relief, restoration and overall rehabilitation.

Achieving the desired sustainability objectives by factoring sustainable development (SD) considerations in all the four major phases of the DRM loop – prevention, preparedness, response and recovery.

The overall risk (in the absence of any risk-reduction measures) will be progressively reduced to a level where any resulting disaster from the residual risk will be considered manageable.

neo-DRM-SD Model

The key to successful implementation of the model is the ability to progressively reduce risk through mitigation (R1), adaptation (R2) and readiness (R3) measures carried out 'before the event' under prevention and preparedness. The residual risk is shown by R4 which when realized as disaster (D1) is presumably small and manageable. The post disaster activities relief (D2), restoration (D3) and sustainable development (D4) will enhance resilience (reduced disaster) under response and recovery phases.

Developing Country

A developing country on fast-track towards developed status generally will :

- adopt sustainable technologies (Green technology) quickly and across the nation,

- strive to eradicate abject poverty, while simultaneously accelerate activities to alleviate relative poverty, i.e. 'hardship alleviation',
- preserve the environmental resource base and life-supporting mechanisms (the natural capital) through risk assessment and rehabilitation of hotspots,
- ensure food, water, energy and human security through good governance,
- public–private partnership, strategic environmental assessment and setting SDGs and promote education for SD and sustainability science for sustained economic growth, social cohesion and overall well-being of people.

Thus moving from an event based to a process based intervention strategy for disaster risk reduction/management (DRR/M), in which case, the vulnerable communities will become active participants rather than remaining as passive victims.

Application of neo-DRM-SD Model

- The proposed neo-DRM-SD will prompt us to intervene strategically at the risk level to keep on reducing the multiple risks posed by SD challenges to levels manageable by people and planet alike.
- Our approach will require that we start taking here-and-now steps through no regret measures, while simultaneously intensifying efforts on more involved mitigation challenges that require policy, finance and mindset changes.
- For developing countries, more than a mind-set change will be required; empowerment and the creation of an enabling environment are critical. Here the

specifics of the 'means of implementation' – finance, technology, capacity building, trade and networking – adopted in the Rioþ20 outcomes, become vital.

Example:

- The development of neo-DRM-SD by the Centre for Global Sustainability Studies (CGSS) at Universiti Sains Malaysia is an attempt to re-orienting its research priorities while pursuing knowledge-based engagement for community development and security of livelihoods.

- CGSS used the neo-DRM-SD methodology to assess community vulnerability and to implement cost-effective adaptation measures in Kuala Nerang, in Northern Malaysia, a community extremely vulnerable to floods.

- We completed vulnerability assessment and risk rating by factoring the magnitude (how big), intensity (how strong), probability (how often) of the impact, and capacity (how resilient) of the exposure units.

- This assessment and risk prioritization were essential to prevention and preparedness-based interventions before the event, and the response and recovery activities after the event.

- Our project eventually received two Regional Centre of Expertise (RCE) 'Recognition and Honor Awards' in 2012 from United Nations University Global RCE Program for innovative community-based sustainability research.

Workshop

The three-day workshop will address:

1. All technical terms involved in the DRM cycle, clearly explain the connection between DRM and SD,
2. Train participants on the use of an easy to use risk assessment methodology (R.A.M developed by CGSS),
3. Expose them to loss and damage assessment approaches, help prioritise adaptation options, and
4. Train them on risk reduction project planning using logical framework analysis & Atkissons methodology to develop and implement interdisciplinary risk reduction projects.
5. The backdrops of discussions will be the Hyogo Framework and the Future We Want.

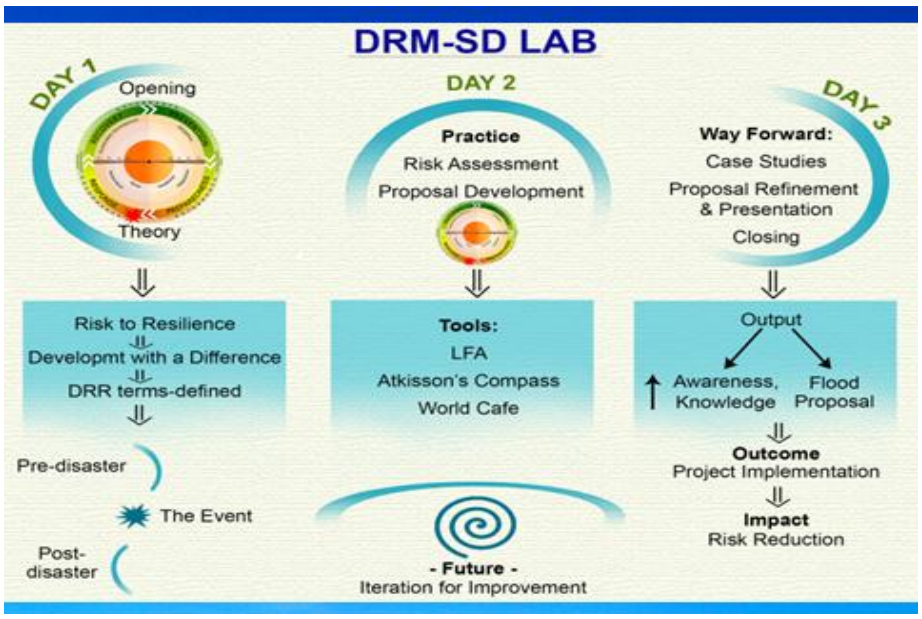
Conclusion

- The neo-DRM-SD is applicable to challenges in minimizing the risk face and to work in partnership with implementing agencies such as government and NGOs to apply sustainability principles and practices to effectively respond and recover from any disaster.
- We believe if these principles and a new approach is adopted and practised over the long-term, a sustainable pathway could be found for all nations, especially for the less developed and developing countries, to be free of poverty, debilitating disasters and

diseases, rapid loss of biodiversity and depleting capital, by asserting that the price of this freedom from disaster is eternal vigilance and proactive action.

DRM-SD: RISK & DISASTER DEFINED by Prof. Kanayathu Chacko Koshy

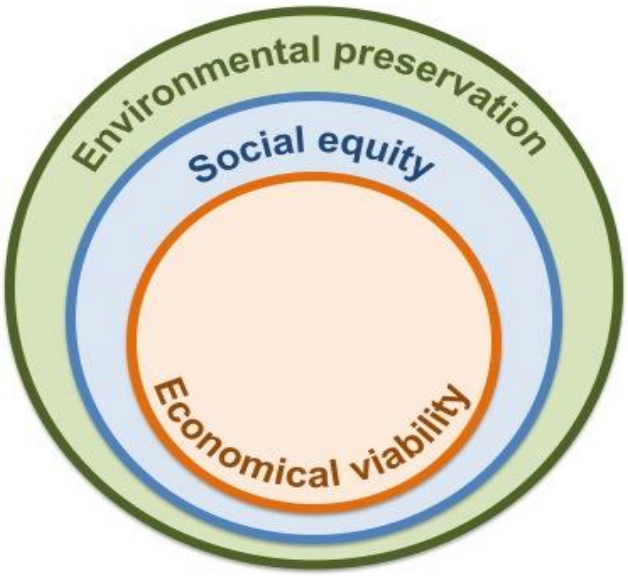
Training Overview



Sustainability

For development to be sustainable, issues of environment, society and the economy must be handled in an integrated way and the degree of healthy interaction is usually equated to the overall human well being that results; shown at the centre of this Venn dig. See also the Euler dig of SD – one inside the other.

Strong Sustainability Model – SD



The Euler diagram of SD – one inside the other. **The 'strong sustainability model' advocates a hierarchical relation of the three spheres.** In this model the circles are one inside the other with the environment (biosphere) outside. Society is seen as a subset of the biosphere and economy is merely a subsystem of human society. Without the biosphere, the other components do not exist. While this model provides a better sense of the relationships between the three components, it is seen as an ecologist's vision of sustainability, which grossly underestimates social and economic innovation possibilities. Such innovations may well have the potential to reduce human impacts on the environment to what might just be

within the planet's carrying capacity. But this requires a radical change in conventional business goals, models and operations.

Hazard

Definition: a potentially damaging physical event, phenomenon, or human activity that may cause injury, property damage, social and economic disruption, environmental degradation or loss of life.

Impact

Definition: the manifestation (realization) of the destructive forces of hazards that destroy life and properties.

Exposure Units

Definition: the sectors or groups that are impacted upon. The stronger the coping capacity, the weaker the impact.

Capacity

Definition: a combination of all the strengths and resources available within a community, society or organization that can reduce the level of risk or the effects of a disaster.

Definition: the conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility (inability to withstand) of a community to the impact of hazards. (Antonym – Resilient)

Risk

***Definition*:** the probability (likely, 'chance') of harmful consequences, or expected losses/damage (injuries, property, livelihood, economic activity disrupted or environment damaged, deaths) resulting from interaction between natural or human-induced hazards and vulnerable exposure units.

Disaster

Definition: "a serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the capacity of exposure units to cope using only its own resources."

Disaster is "Realised Risk".

Risk Management 2/3

ISDR Risk Equation: <u>Hazard x Vulnerability</u> = Risk

Capacity

In a general sense, the principles of risk management will come in very handy here. Risk is a function of hazard and vulnerability and to reduce risk we have to reduce both before the risk becomes a disaster.

Hazard - Mitigation = Vulnerability

In a general sense, the principles of risk management will come in very handy here. Risk is a function of hazard and vulnerability and to reduce risk we have to reduce both before the risk becomes a disaster.

Impact - Adaptation = Vulnerability

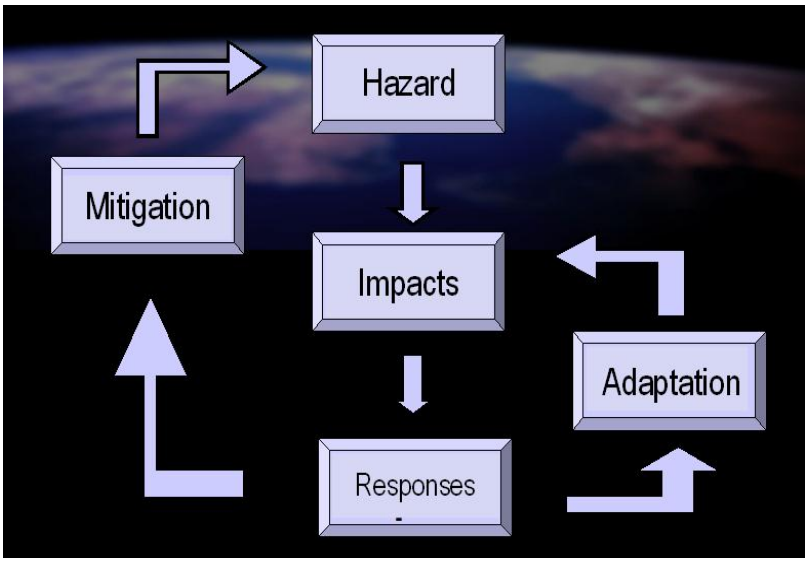
This is where both mitigation and adaptation feature.

Response Measures

Mitigation: source ↓ & sink ↑

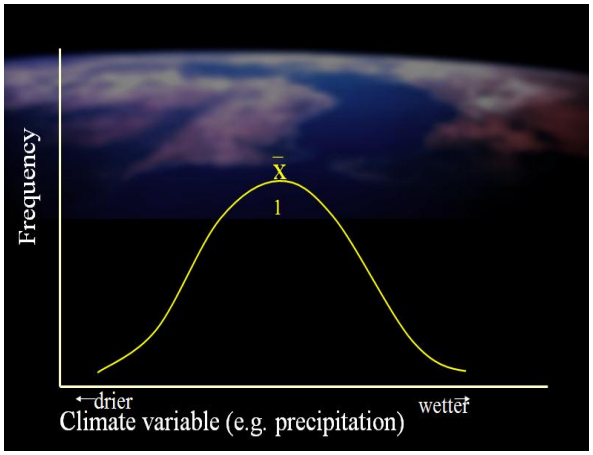
Adaptation: coping with consequences

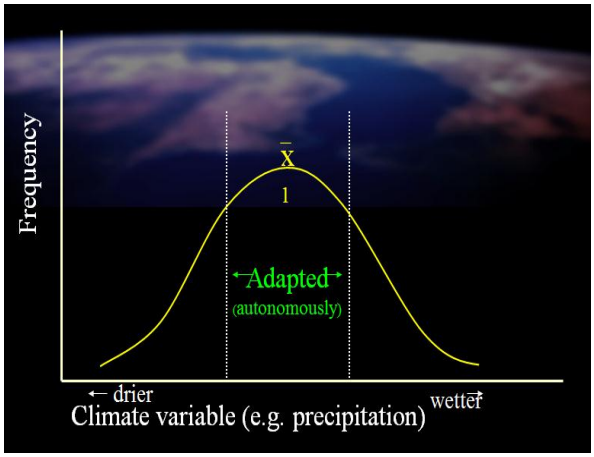
Our CC response, for example should involve both mitigation (dealing with the root cause of the problem) and adaptation (adjusting to the impacts).

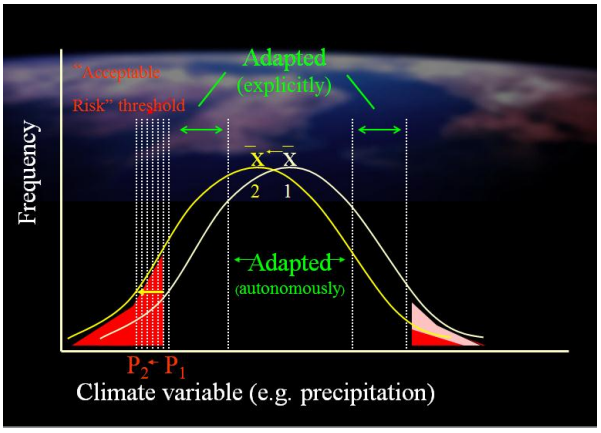


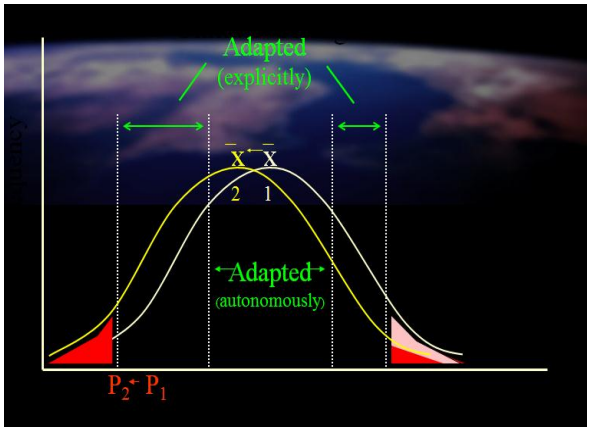
Residual Risk

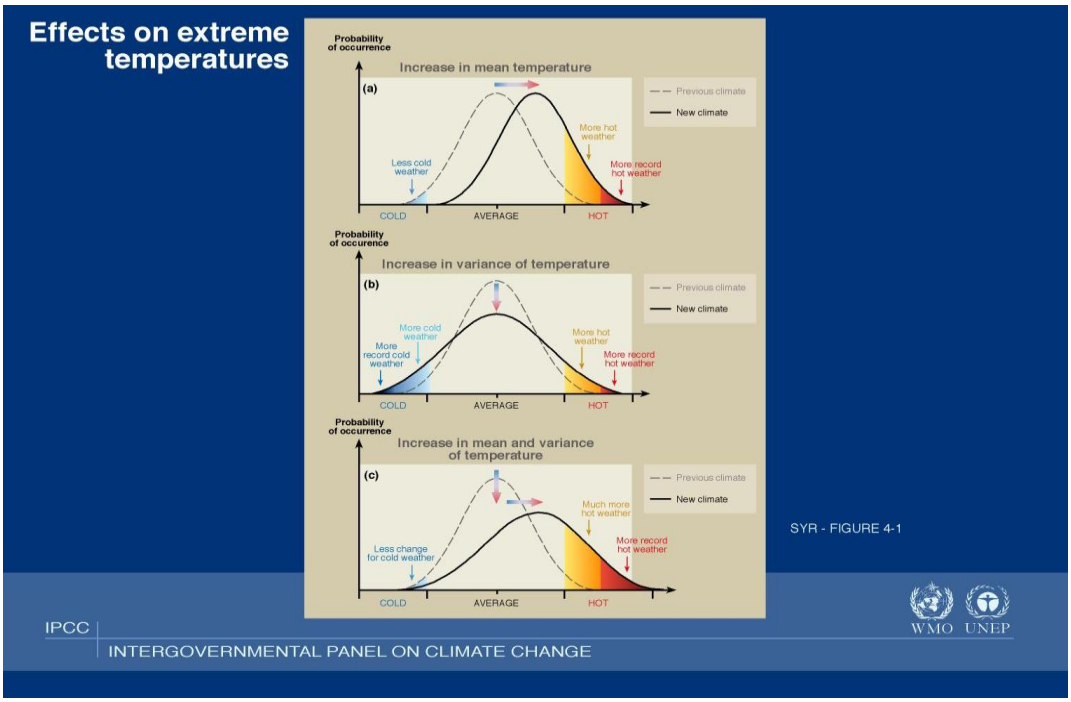
…the Risk that still remains after all response measures…

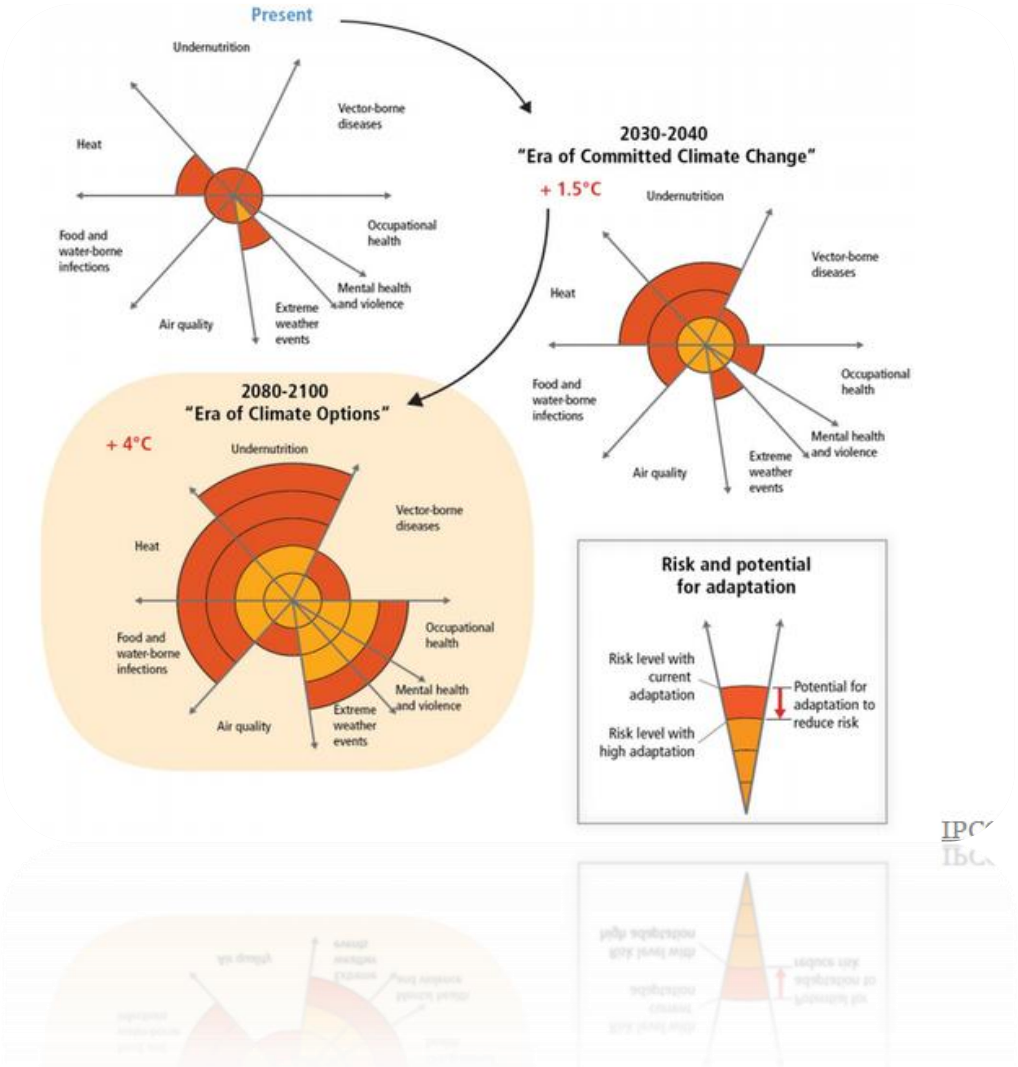




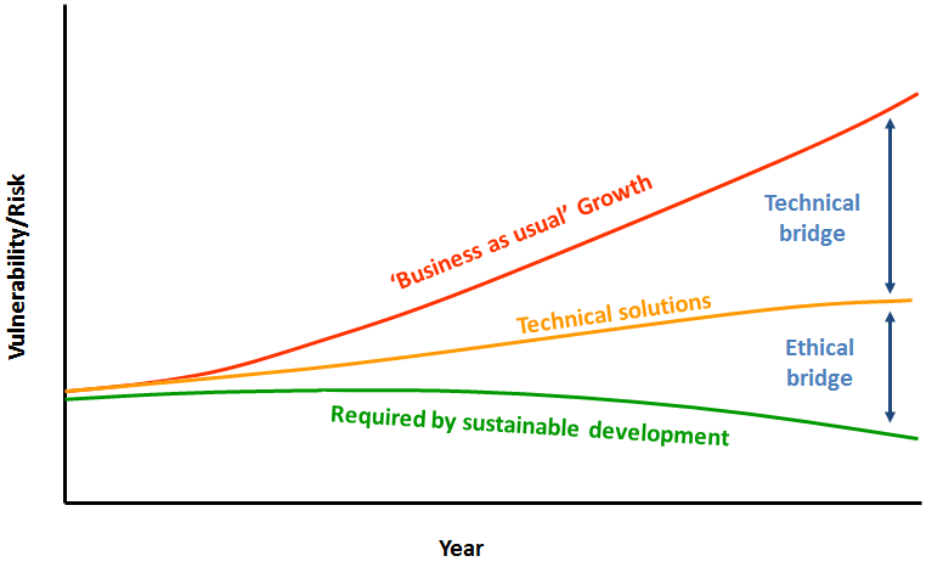





Effects on extreme temperatures
Probability of occurrence
Increase in mean temperature
(a)
Previous climate
New climate
Less cold weather
More hot weather
More record hot weather
COLD
AVERAGE
HOT
Probability of occurence
Increase in variance of temperature
(b)
Previous climate
New climate
More cold weather
More record cold weather
More hot weather
More record hot weather
COLD
AVERAGE
HOT
Probability of occurrence
Increase in mean and variance of temperature
(c)
Previous climate
New climate
Much more hot weather
More record hot weather
Less change for cold weather
COLD
AVERAGE
HOT
SYR - FIGURE 4-1
IPCC
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
WMO UNEP

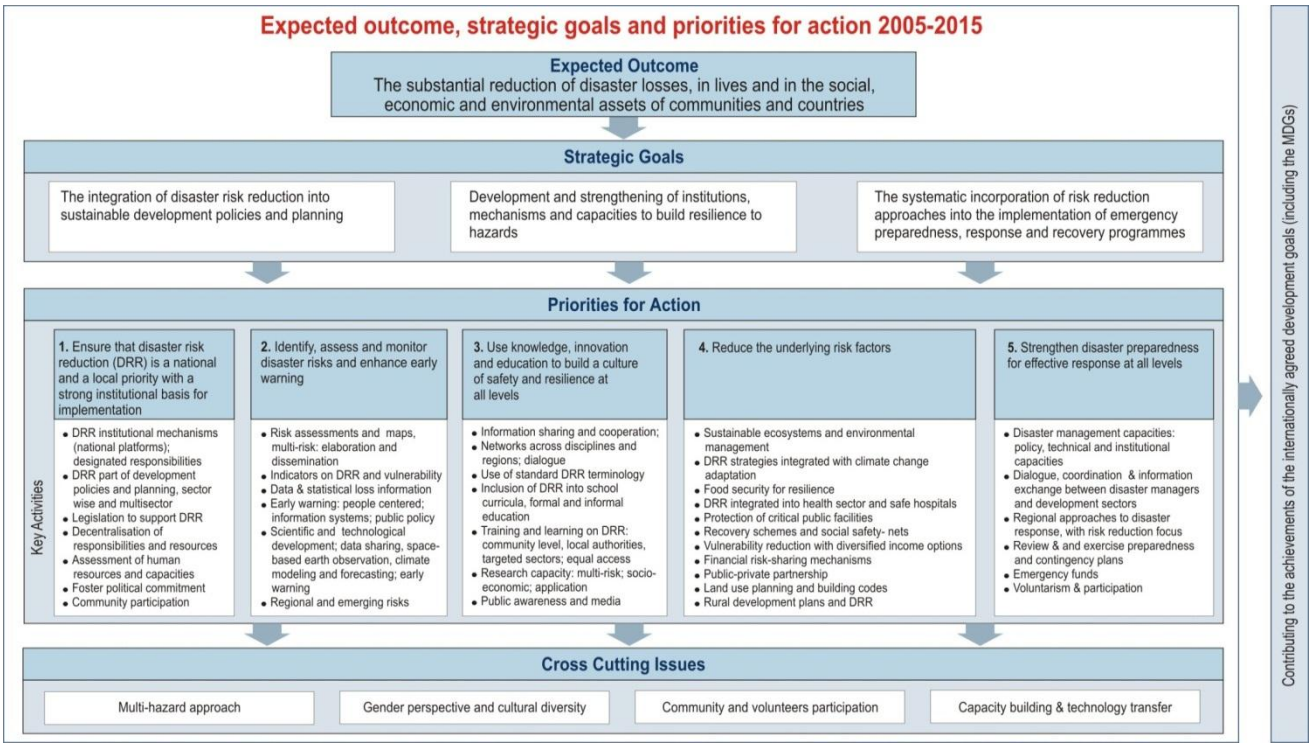

Present
Undernutrition
Vector-borne diseases
Heat
Occupational health
Food and water-borne infections
Mental health and violence
Air quality
Extreme weather events
2030-2040
"Era of Committed Climate Change"
+ 1.5°C
Undernutrition
Vector-borne diseases
Heat
Occupational health
Food and water-borne infections
Mental health and violence
Air quality
Extreme weather events
2080-2100
"Era of Climate Options"
+ 4°C
Undernutrition
Vector-borne diseases
Heat
Occupational health
Food and water-borne infections
Mental health and violence
Air quality
Extreme weather events
Risk and potential for adaptation
Risk level with current adaptation
Risk level with high adaptation
Potential for adaptation to reduce risk

Two bridges are needed to close the vulnerability/risk gap.



Summary of the Hyogo Framework for Action 2005-2015

Building the Resilience of Nations and Communities to Disasters (HFA)



Implementation and Follow-Up

In order to achieve the goals and act upon the priorities identified in this Framework, the following tasks have been identified to ensure implementation and follow-up by States, regional and international organizations in collaboration with civil society and other stakeholders. The ISDR partners, in particular the Inter-agency Task Force on Disaster Reduction and secretariat, are requested to assist in implementing this Framework for Action.

General Considerations

- Implementation by different stakeholders, multi-sectoral approach; participation of civil society (NGOs, CBOs, volunteers), scientific community & private sector is vital
- States primarily responsible; an enabling international environment is vital, incl. strengthened regional capacities
- Build multi-stakeholder partnerships
- Particular attention to:
  - Small island developing States: Mauritius Strategy;
  - Least developed countries;
  - Africa
- States, regional and international organizations to foster coordination among themselves and a strengthened International Strategy for Disaster Reduction (ISDR)
- Follow-up integrated with other major conferences in fields relevant to DRR; reviews as appropriate

Actors

Critical tasks

States

- Designate national coordination mechanisms for the implementation and follow up, communicate to the ISDR secretariat;
- National baseline assessments of the status of DRR;
- Publish and update a summary of national programme for DRR including international cooperation;
- Develop procedure for reviewing national progress including systems for cost benefit analysis and ongoing monitoring on risk;
- Consider acceding to, approving or ratifying relevant international legal instruments and to make sure they are implemented;
- Promote the integration of DRR with climate variability and climate change into DRR strategies and adaptation to climate change; ensure management of risks to geological hazards.

Regional Organizations and Institutions

- Promote regional programmes including for technical cooperation, capacity development, the development of methodologies and standards for hazard and vulnerability monitoring and assessment, the sharing of information and effective mobilization of resources;
- Undertake and publish regional and sub-regional baseline assessments;
- Coordinate and publish reviews on progress and support needs, and assists countries in preparation of national summaries;
- Establish specialized regional collaborative centers;
- Support the development of regional mechanisms and capacities for early warning, including for tsunami

International Organizations (including UN System and IFIs)

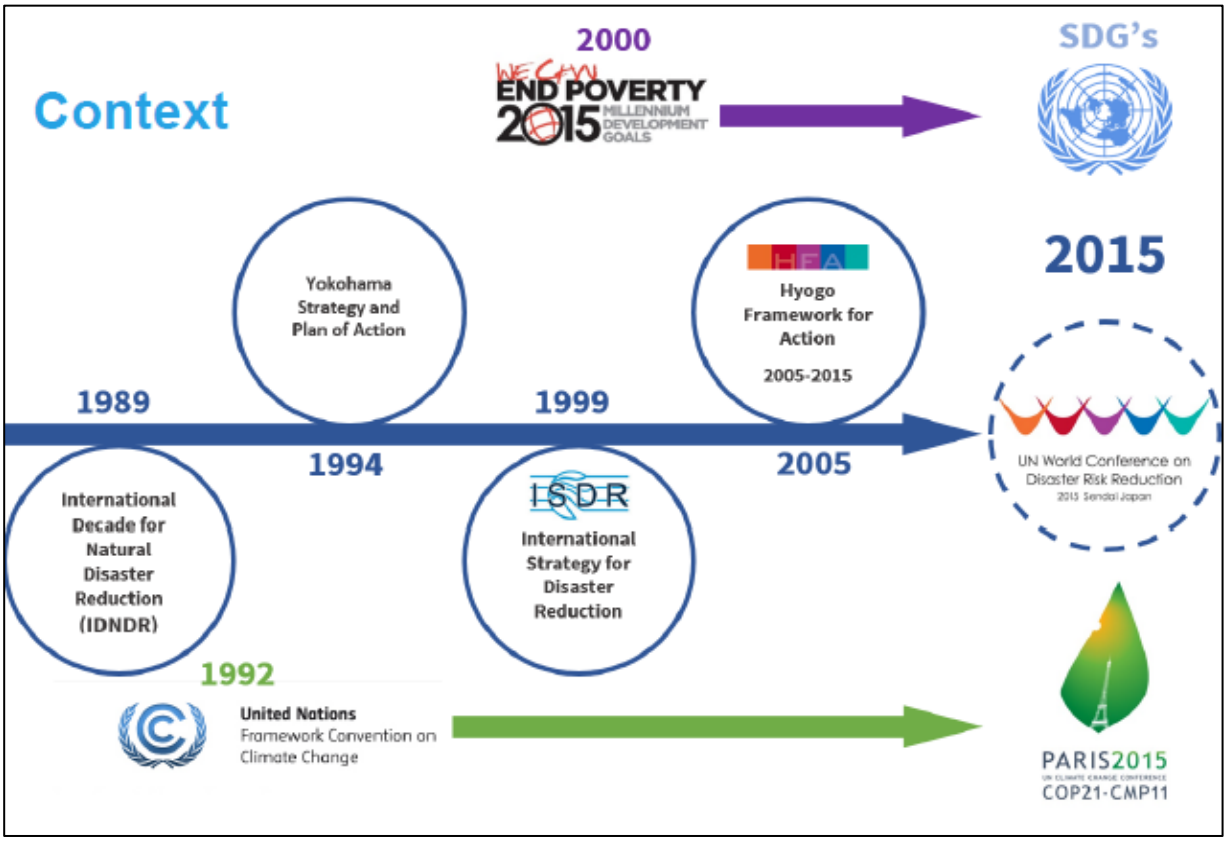
- Engage in the implementation of the ISDR by encouraging integration of DRR into humanitarian and sustainable development fields;
- Strengthen the capacity of the UN system to assist disaster-prone developing countries in DRR and implement measures for assessment of progress;
- Identify actions to assist disaster-prone developing countries in the implementation of the HFA, ensure their integration and that adequate funding is allocated; assist in setting up national strategies and programmes for DRR;
- Integrate actions into relevant coordination mechanisms (UNDG, IASC, RCs and UN Country Teams);
- Integrate DRR into development assistance frameworks such as CCA/UNDAF, PRSP;
- In collaboration with networks and platform support: data collection and forecasting on natural hazards and risks; early warning systems; full & open exchange of data;
- Support States with coordinated international relief assistance, to reduce vulnerability & increase capacities;
- Strengthen international mechanisms to support disaster stricken States in post-disaster recovery with DRR approach
- Adapt & strengthen inter-agency disaster management training for DRR and capacity building.

ISDR (Inter-Agency Task Force on Disaster Reduction & secretariat)

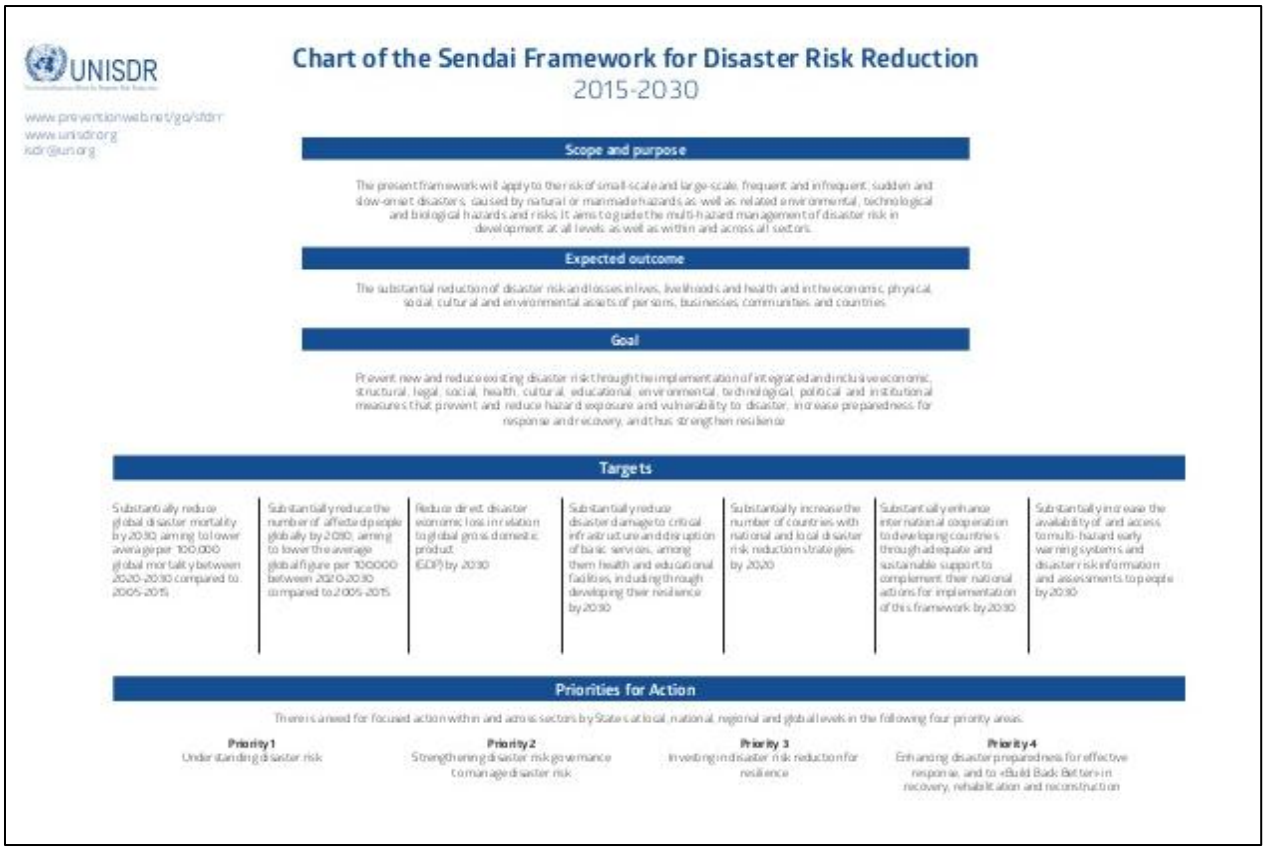
- Develop a matrix of roles and initiatives in support of follow/up to the HFA;
- Facilitate the coordination of effective actions within the UN system and other international and regional entities to support the implementation of the HFA, identify gaps, facilitate processes to develop guidelines and policy tools for each priority area;
- In broad consultation, develop generic, realistic and measurable indicators. These indicators could assist States in measuring progress in the implementation of the HFA;
- Support national platforms & regional coordination;
- Register relevant partnerships with Commission on Sustainable Development;
- Stimulate the exchange, compilation, analysis and dissemination of best practices, lessons learnt;
- Prepare periodic review on progress towards achieving the objectives of the HFA and provide reports to the UNGA & other UN bodies

Resource Mobilization: States, Regional and International Organizations

- Mobilize resources and capabilities of relevant national, regional and international bodies, including the UN system;
- Provide and support the implementation of the HFA in disaster prone developing countries, including through financial and technical assistance, addressing debt sustainability, technology transfer, public-private partnership and North-South and South-South cooperation;
- Mainstream DRR measures into multilateral and bilateral development assistance programmes;
- Provide adequate voluntary financial contribution to the UN Trust Fund for DR to support follow-up activities to HFA; review usage and feasibility for the expansion of this fund;
- Develop partnership to implement schemes that spread out risks, reduce insurance premiums, expand insurance coverage and increase financing for post-disaster reconstruction, including through public and private partnerships. Promote an environment that encourages a culture of insurance in developing countries.




UNISDR
The United Nations Office for Disaster Risk Reduction
WCDRR
Sendai Framework for DRR 2015-2030:
An instrument for achieving risk-resilient development
Feng Min Kan, PhD
Head of UNISDR Asia-Pacific Office



Shift of SF from HFA

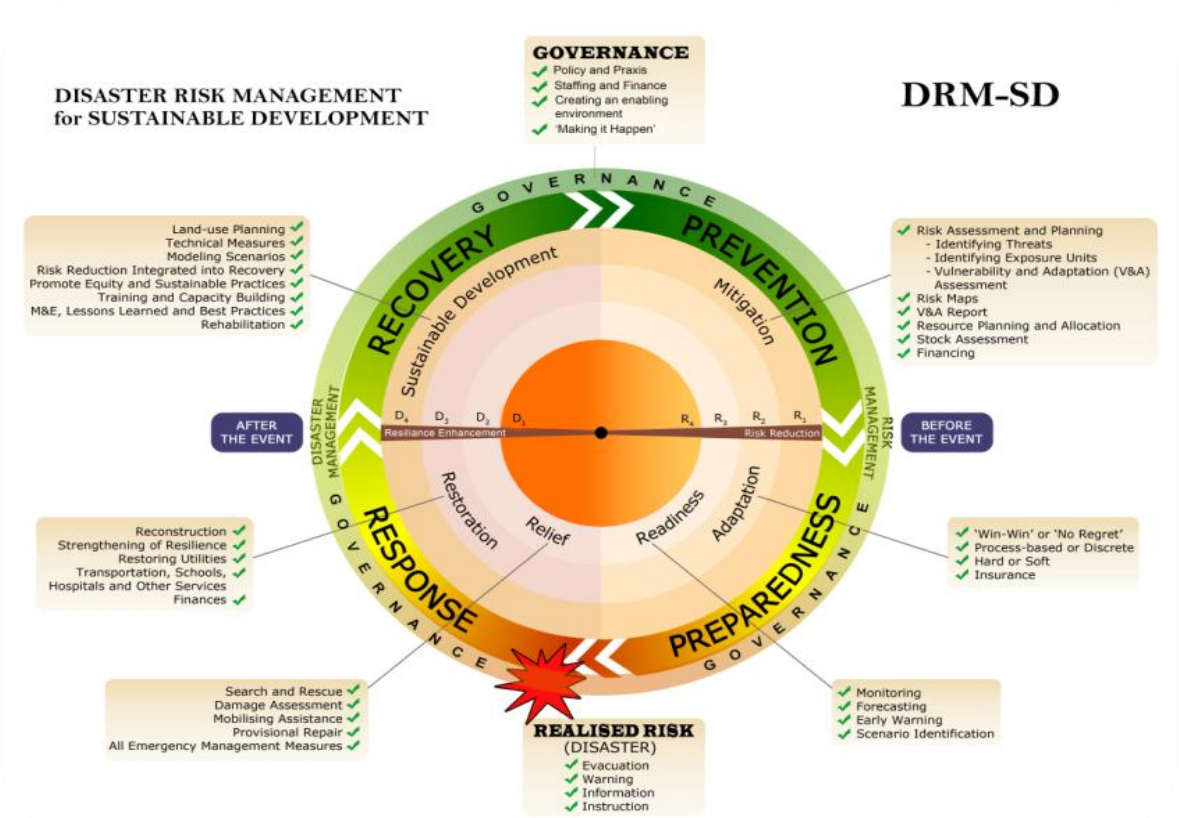
1. Shift from disaster loss to disaster risk.

2. Shift from a disaster management focus to more disaster risk management.

3. Shift from “what to do” to “how to do”.

- Promote a people-centred preventive approach to DRR
- Articulate governance to manage disaster risk and strengthen accountability including the role of national platform;
- Focus on understanding and tackling disaster risk drivers; with shared responsiblity for DRR with stakeholders
- Mobilize risk-sensitive investment by adopting risk-imported policies and practices in both the public and private sectors;

- Enhance the Global Platform and Regional Platforms for coherence , monitoring and periodic reviewers



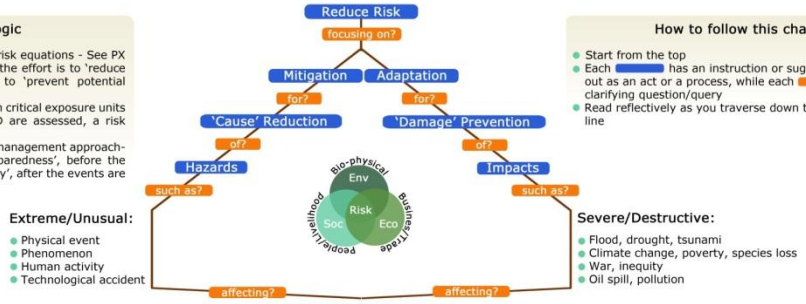
RISK ASSESSMENT METHODOLOGY (R.A.M)

The R.A.M Logic

- The assessment is based on the risk equations - See PX
- Essentially in risk management, the effort is to 'reduce the cause' of the hazard and to 'prevent potential damage' of the impacts
- Once the impacts of the hazard on critical exposure units spanning the three pillars of SD are assessed, a risk rating is carried out
- Based on this prioritization, risk management approaches such as 'prevention and preparedness', before the event, and 'response and recovery', after the events are implemented

How to follow this chart?

- Start from the top
- Each ▬ has an instruction or suggestion to be carried out as an act or a process, while each ▬ contains a clarifying question/query
- Read reflectively as you traverse down to the bottom-most line



How the Risk Rating works?

1. Given that disasters result in 'loss', the goal is to minimize loss as much as possible.
2. Using any semi-quantitative assessment approach, assign H (High), M (Medium) and L (Low) symbols to the four atributes, shown in columns 4-7, of the impact under consideration.
3. Then use the table on the right to assign an average 'Risk Rating' symbol in column 8 (see 4 & 5).

contd. →

Worksheet

1 Sphere	2 Resource / Sector	3 Impact	4 Magnitude / Coverage H, M, L (How Big)	5 Intensity / Severity H, M, L (How Strong)	6 Probability / Certainty / Timing H, M, L (How Often)	7 Importance / Capacity / H, M, L (How Resilient)	8 Risk Rating H, M, L (Average)
Social	People	Of Hazard/ Extreme Event e.g. flood, drought, tsunami	M	M	L	H	
	Livelihood		M	M	L	H	
Economic	Business		M	M	L	H	H
	Trade		M	M	L	H	
Environmental	Ecosystem		M	M	L	H	
	Physical		M	M	L	H	

See Fig. 1

→ contd.

Risk Rating Table

High H (>50%) 51-100%	Medium M (≤50%) 25-50%	Low L (≤25%) 0-25%
4H	4M	4L
3H, M	3M, L	
3H, L	3L, H	
3M, H	3M, L	
2H, M, L	2L, M, H	
2M, L, H		

4. The above table has been generated assigning the upper level value (H-100%), (M-50%) and (L-25%) to average the letter representations' in the left table. The entries in column 8 is also a measure of the vulnerability of the exposure units.

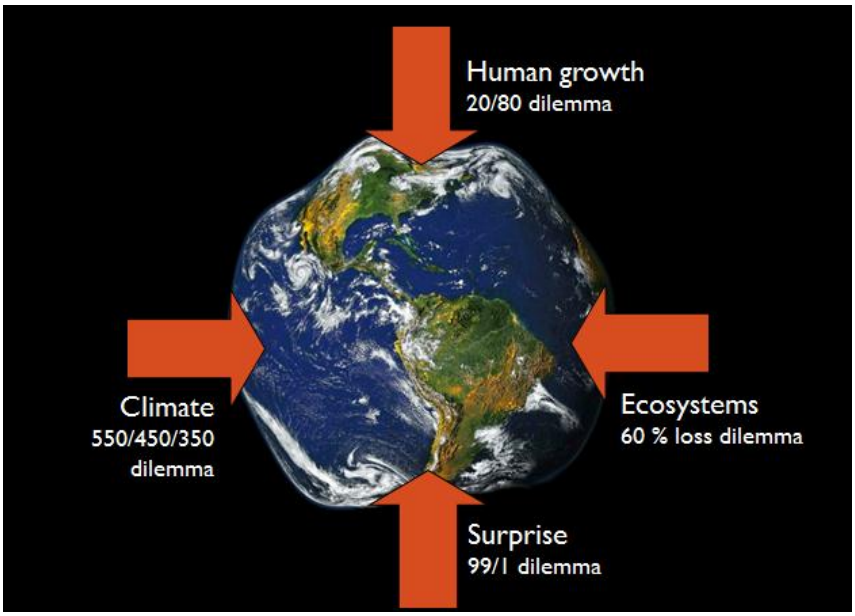
5. E.g. 2M, L, H $= \frac{2M+L+H}{4} = \frac{2x50+25+100}{4} \approx 56 = H$

Disaster Risk Management for Sustainable Development

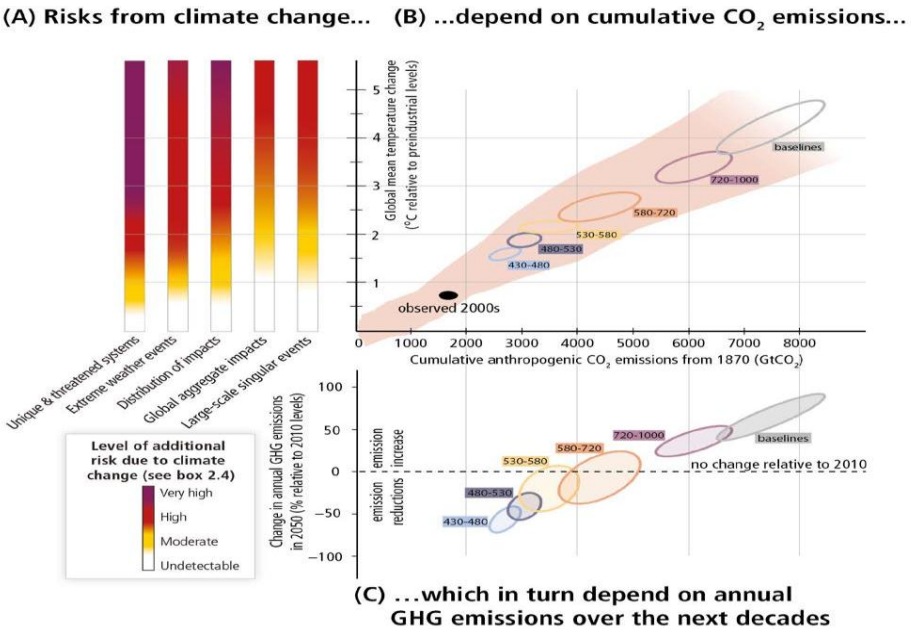
PRE-DISASTER: DISCUSSION ON SOUTH EAST ASIAN CLIMATE, RISK MANAGEMENT

PRE-DISASTER STAGE: PREVENTION & PREPAREDNESS by Robert Steele

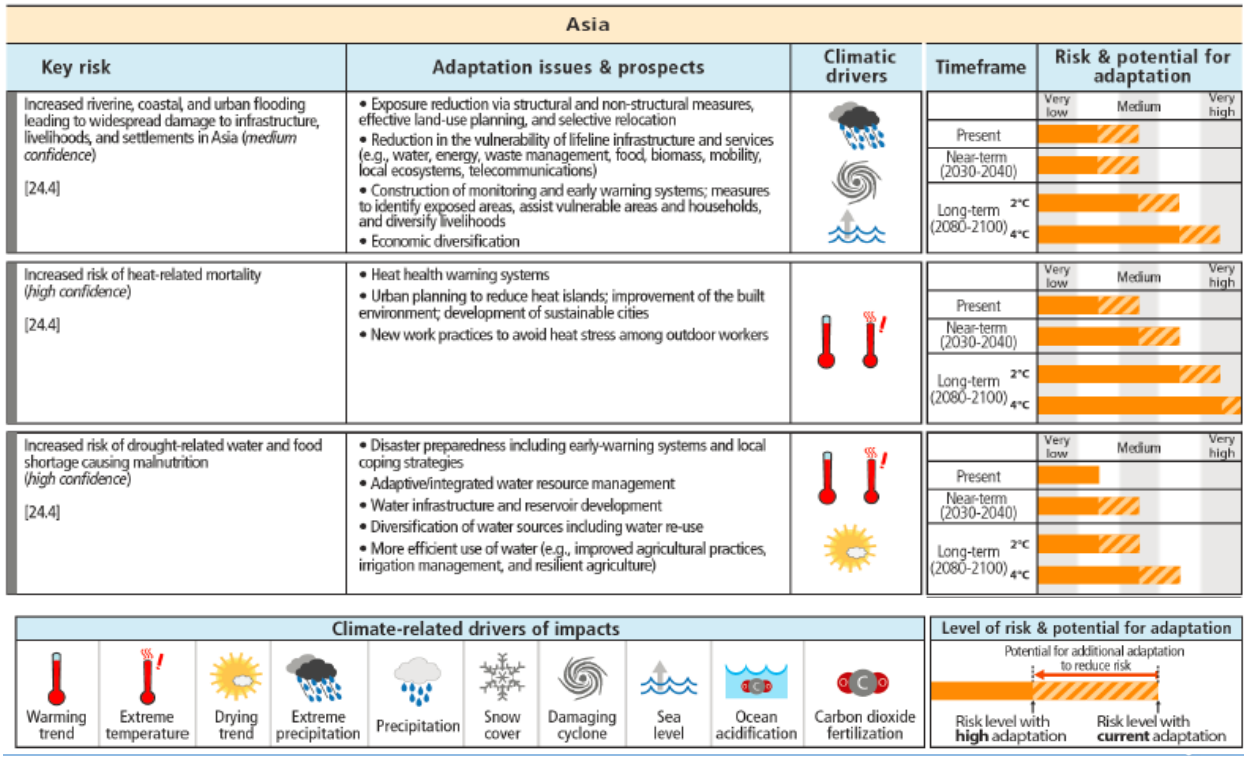
The Quadruple Squeeze



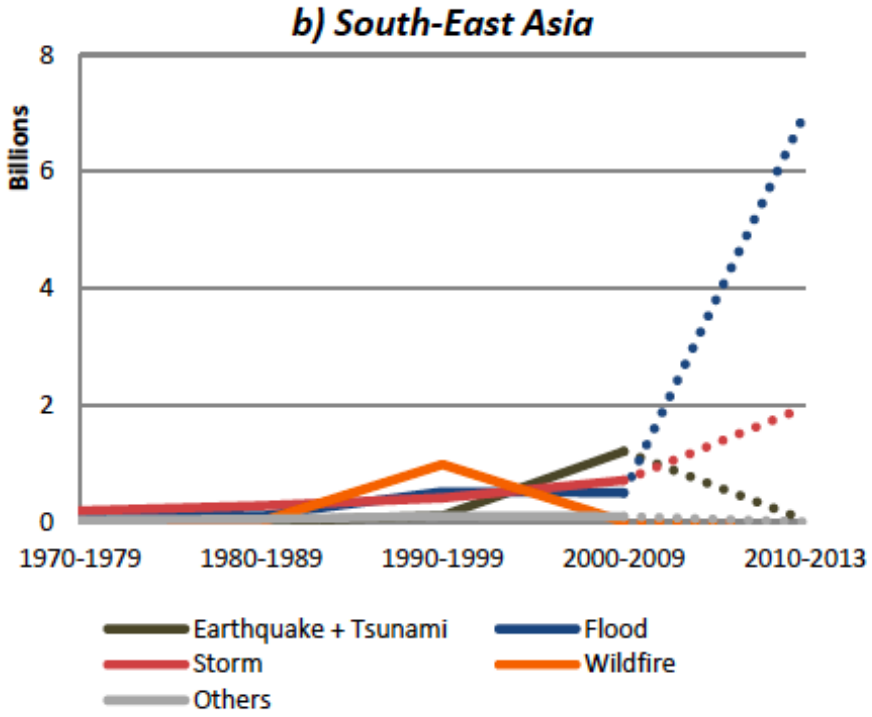
Climate change risk is increasing.



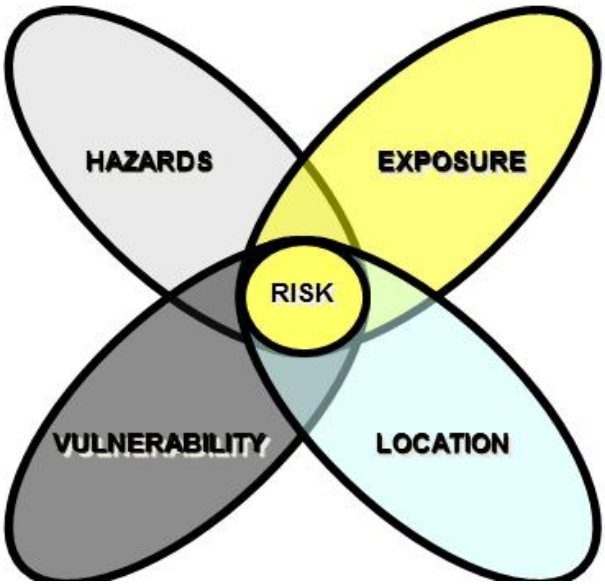
Key Risks of Climate Disruption in Asia



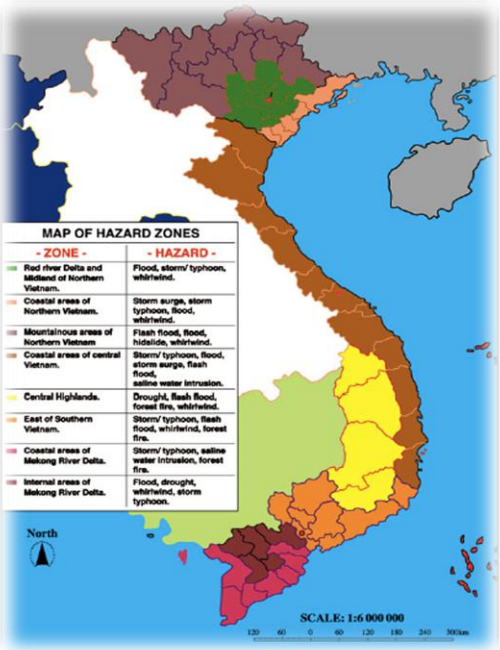
Average yearly economic losses from natural disasters:



Elements of Risk



Metrological Disaster Profile for Vietnam



- *Typhoons* - According to historical data from 1989-2010, storms and typhoons accounted for 49 percent of all natural disasters.
- *Floods* - Floods are also one of the major and most dangerous types of natural disaster in Vietnam, constituting 37 percent of all disasters.
- *Drought* - Drought causes the third greatest losses in Vietnam despite only representing two percent of disaster events.
- *Landslides* - Due to the geophysical landscape consisting of large mountainous areas and lowland areas by the deltas, Vietnam is vulnerable to landslides, especially in the

northern and central highlands. However, total landslides account for a mere three percent of all natural disasters.

Characteristic of Disaster

- Predictability
- Controllability
- Speed of onset
- Length of forewarning
- Duration of impact
- Scope and intensity of impact

Hazard, Exposure & Vulnerability

Hazard, exposure and vulnerability drive direct risk in Disaster Risk Management Analysis.

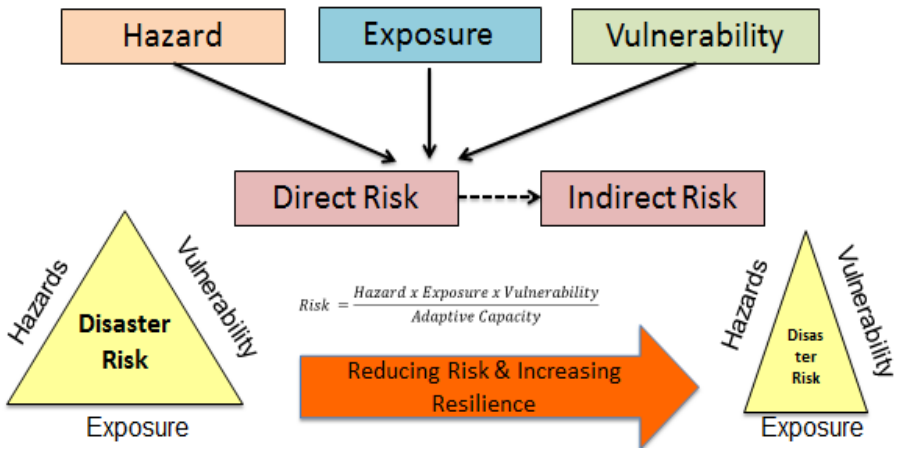


Figure shows the common understanding that (direct) risk is a function of hazard, exposure and vulnerability. Direct risk is the likelihood of direct losses, which are the immediate impact of the disaster; such as physical damage caused by flood waters. Indirect risk relates to indirect losses, which are the consequences which flow from the direct loss; such as the inability to continue production for some time or permanently due to loss of assets (Mechler, 2004).

Resilience

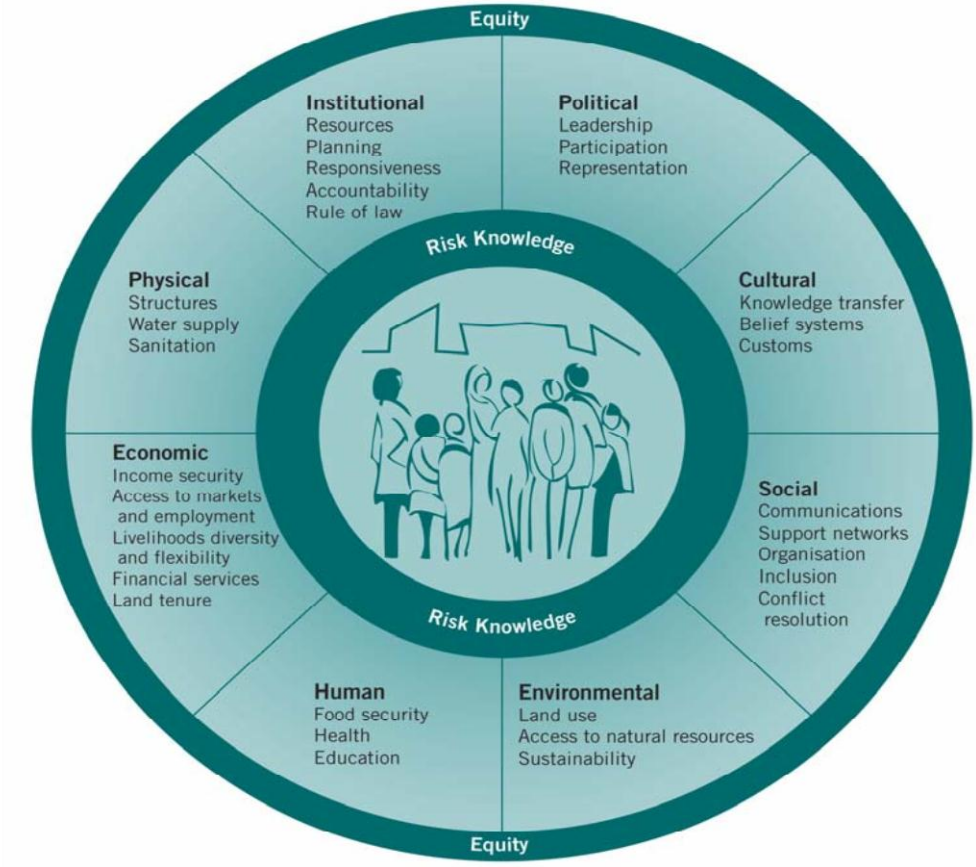
Etymology: 17th century, from Latin *resiliens*, *resilire* "to rebound, recoil" - *re*- "back" + *salire* "to jump, leap" (C.S. " Buzz " Holling – 1973 – landscape ecology).

"*Resilience is the capacity of a system to absorb disturbance and reorganize while undergoing change, so as to still remain essentially the same function, structure, identity, and feedbacks." (*B. Walker et al, '*Resilience, Adaptability and Transformability in Social-ecological Systems*', Ecology and Society 9 (2) p. 5

"*Resilience is the ability to absorb disturbances, to be changed and then to re-organise and still have the same identity (retain the same basic structure and ways of functioning). It includes the ability to learn from the disturbance. A resilient system is forgiving of external shocks."*

The Resilience Alliance, http://www.resalliance.org/

Key factors influencing resilience and decreasing disaster risk:



Source: Turnbull et al., 2013

Disaster Risk Management Cycle

Prevention

- *The outright avoidance of adverse impacts of hazards and related disasters*.

- Comment: Prevention (i.e. disaster prevention) expresses the concept and intention to completely avoid potential adverse impacts through action taken in advance. Examples include dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high risk zones, and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake. Very often the complete avoidance of losses is not feasible and the task transforms to that of mitigation. Partly for this reason, the terms prevention and mitigation are sometimes used interchangeably in casual use.

Mitigation

- *The lessening or limitation of the adverse impacts of hazards and related disasters*.

- Comment: The adverse impacts of hazards oftencannot be prevented fully, but their scale or severity can be substantially lessened by various strategies andactions. Mitigation measures encompass engineering techniques and hazard-resistant construction as well as improved environmental policies and public awareness. It should be noted that in climate change policy, “mitigation” is defined differently, being the term used for the reduction of greenhouse gas emissions that are the source of climate change.

Preparedness

- *The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions*.

- Comment: Preparedness action is carried out within the context of disaster risk management and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response through to sustained recovery. Preparedness is based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning, stockpiling of equipment and supplies, the development of arrangements

for coordination, evacuation and public information, and associated training and field exercises. These must be supported by formal institutional, legal and budgetary capacities. The related term “readiness” describes the ability to quickly and appropriately respond when required.

Disasters happen. You plan for them, work to prevent them, or turn a blind eye and hope one will never occur. Sooner or later, you must deal with one. *Disasters come in all sizes.* Sometimes disasters affect a small neighborhood, sometimes the entire community, and in the most extreme and tragic times the entire region and country. Since you do not know when or how extensive the disaster will be, you can only be prepared.”

This remains a valuable principal for disaster prevention - it is better to try to avoid problems in the first place, rather than trying to fix them once they arise.

"An ounce of prevention is worth a pound of cure"

In 1736, Benjamin Franklin organized Philadelphia's Union Fire Company, the first in the city. This famous saying was actually ***fire-fighting advice***.

“Disaster response planning and prevention, or preparedness, are performed when all is sane and quiet, and decisions are made in a rational, carefully considered manner.”

From “Disaster Response and Planning for Libraries” – Miriam B. Khan

Remember the “Stop, Drop & Roll” in case of a fire – it’s imbedded into our unconscious with the drills we did in school.

Structural & Non-Structural Measures in Disaster Prevention & Preparedness Planning

Structural measures	Non-structural measures
• Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazardresistance and resilience in structures or systems;	• Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education.

Common structural measures for disaster risk reduction include dams, flood levies, ocean wave barriers, earthquake-resistant construction, and evacuation shelters. Common non-structural measures include building codes, land use planning laws and their enforcement, research and assessment, information resources, and public awareness programs. Note that in civil and structural engineering, the term “structural” is used in a more restricted sense to mean just the load-bearing structure, with other parts such as wall cladding and interior fittings being termed non-structural.

Disaster Preparedness

- Preparedness should be in the form of money, manpower and materials
- Evaluation from past experiences about risk

- Location of disaster prone areas
- Organization of communication, information and warning system
- Ensuring co-ordination and response mechanisms
- Development of public education program
- Co-ordination with media
- National & international relations
- Keeping stock of foods, drug and other essential commodities

Vietnam Disaster Risks at a Glance

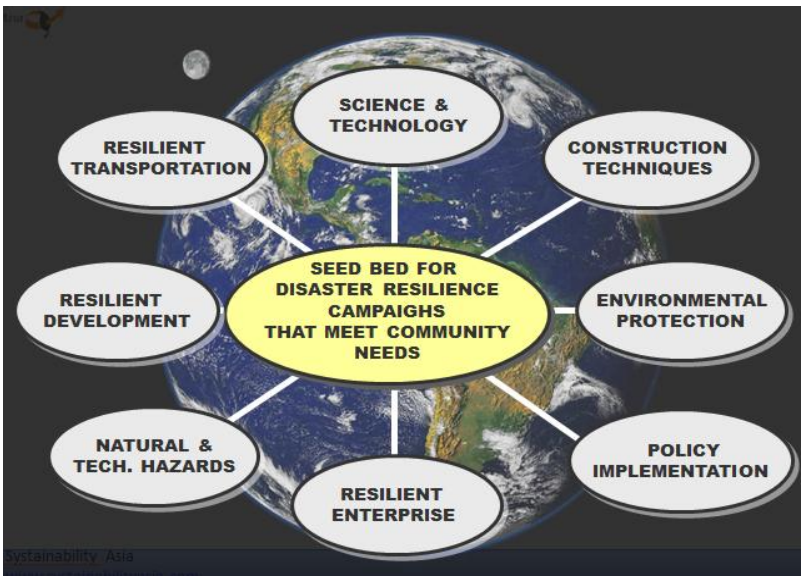
- ***Population:*** 88,780,000
- ***Major Threats:*** Floods, Typhoons, Landslides, Earthquakes, Drought'
- ***Populations Affected:*** Ur ban & Rural Poor, Farmers, Coastal Communities
- ***Locations Affected:*** All
- ***Industries Affected:*** Agriculture, Technology/Communications, Manufacturing;
- ***Compounding Issues:*** Urban Migration, Informal Settlements, Environmental Degradation, Climate Change;
- ***World Risk Index Ranking:*** 18/173
- ***Global Climate Risk Index:*** 6/178

Some questions to discuss….

- **Looking at the four elements of risk in disaster risk management (particularly in relation to Climate related events), what is being done in each area currently in Vietnam?**
- **What are additional things that you suggest should be done in each area of the cluster?**
- **What are the major challenges to effective disaster risk management in Vietnam and how to overcome?**
- **Any priorities that you would set to focus on first?**

Summary & Final Thoughts

Use global knowledge and experiences as a basis for disaster preparedness.



Recommendations for DRR-SD Preparedness

- Mobilizing stakeholder participation of Self Help Groups, Women's Groups, Youth Groups, etc.
- Anticipatory Governance: Simulation exercises, Mock drills and Scenario Analysis
- Indigenous knowledge systems and coping practices
- Living with Risk: Community Based Disaster Risk Management
- Investments in Preparedness and Prevention (Mitigation) will yield sustainable results, rather than spending money on relief after a disaster.
- Most disasters are predictable, especially in their seasonality and the disaster-prone areas which are vulnerable.
- Communities must be involved in disaster preparedness.
- Inclusive, participatory, gender sensitive, child friendly, eco-friendly and disabled friendly disaster management
- Technology driven but people owned
- Knowledge Management: Documentation and dissemination of good practices
- Public Private Partnership

Summary of Key Messages

- Humanity has had a huge impact on the planet's resource base and ecological systems causing planetary climate disruption that is producing more extreme weather events and impacts.

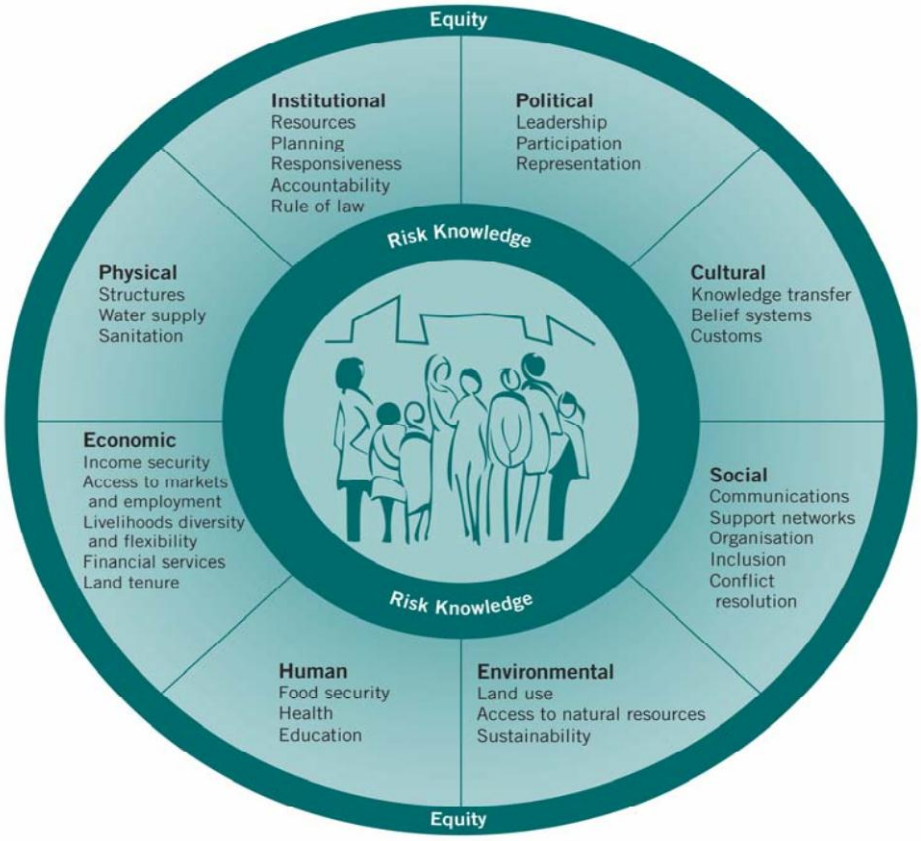
- We must focus on adaptive resilience of our socio-economic and natural environmental systems. We know what to do!

POST-DISASTER: DISASTER MANAGEMENT & POST-DISASTER STAGE:

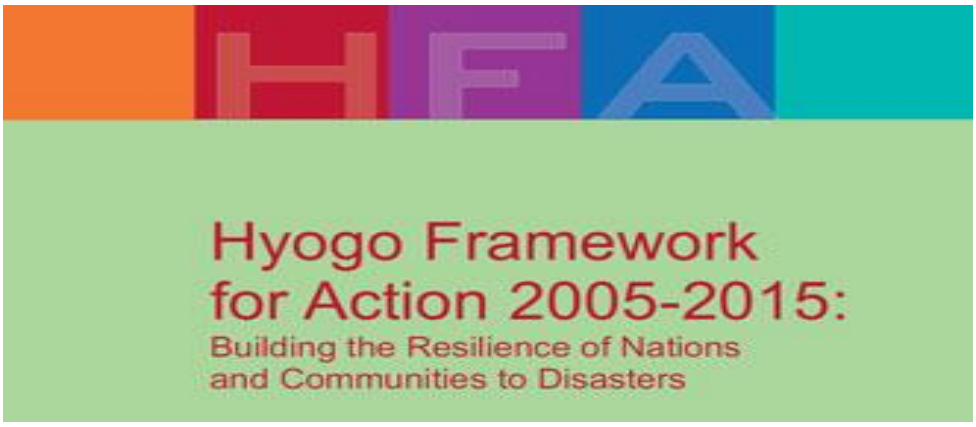
RESPONSE & RECOVERY: LINKING TO THE GOALS OF SUSTAINABLE DEVELOPMENT

How do we respond, recover and rebuild to disaster in order to decrease risk and increase our resiliency in transforming our society to one that is sustainable in the long-term?

Note: Key factors influencing resilience and decreasing disaster risk



Source: Turnbull et al., 2013

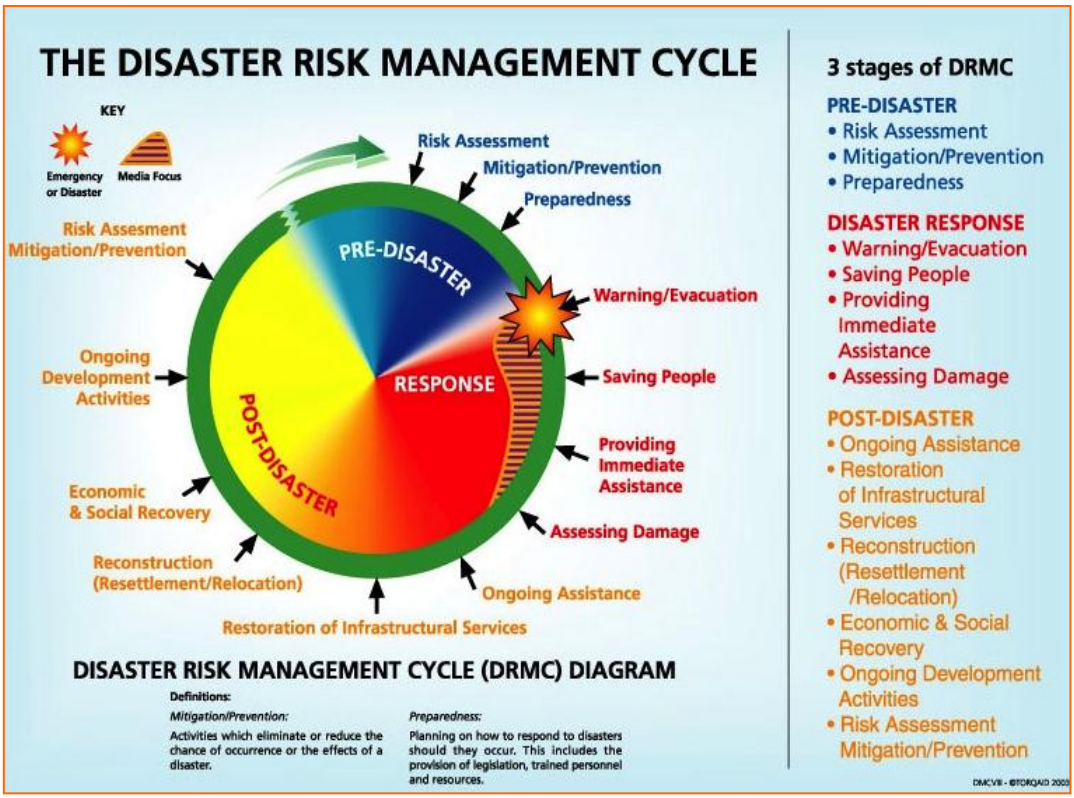


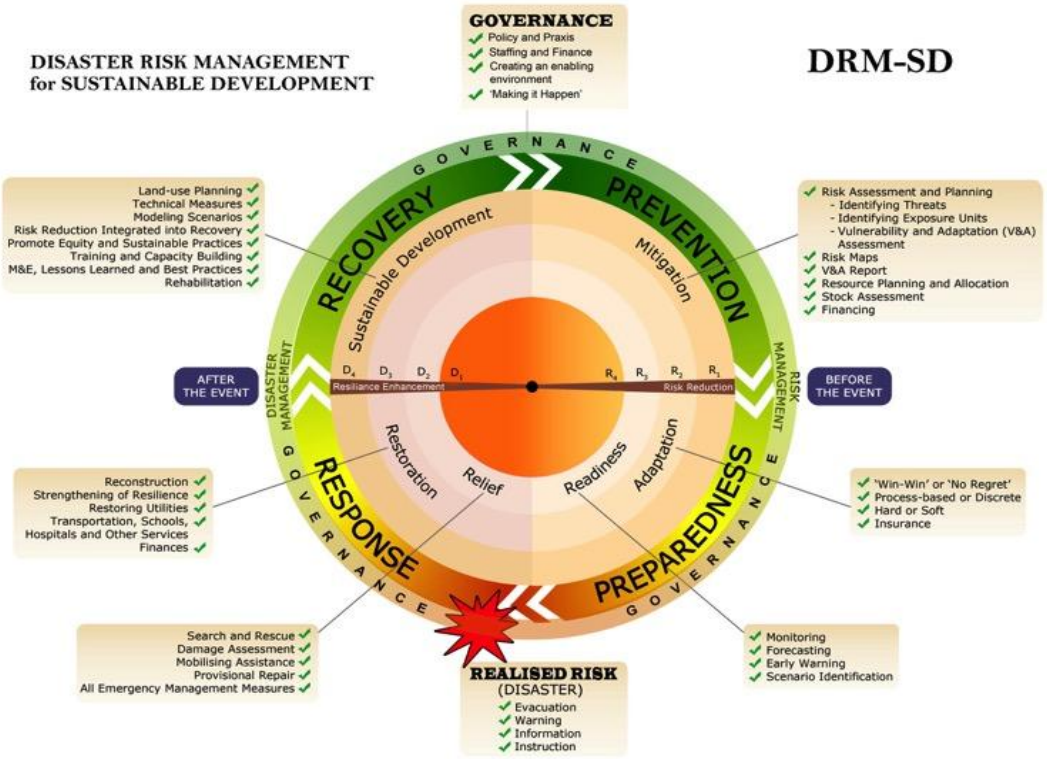
- Hyogo Framework for Action 2005-2015
- Building the resilience of nations and communities to disasters
- Adopted by 168 Governments at the World Conference on Disaster Reduction, held in Kobe, Hyogo Prefecture, Japan, 18-22 January 2005

The HFA identified five separate priorities for action:

- Ensure that disaster risk reduction (DRR) is a national and local priority with a strong institutional basis for implementation;
- Identify, assess and monitor disaster risks and enhance early warning;
- Use knowledge, innovation and education to build a culture of safety and resilience at all levels;
- Reduce underlying risk factors;
- Strengthen disaster preparedness for effective response at all levels.

Source: The Hyogo Framework for Action (HFA)

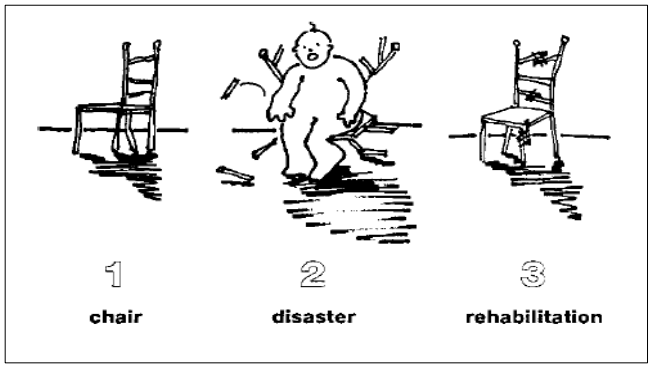


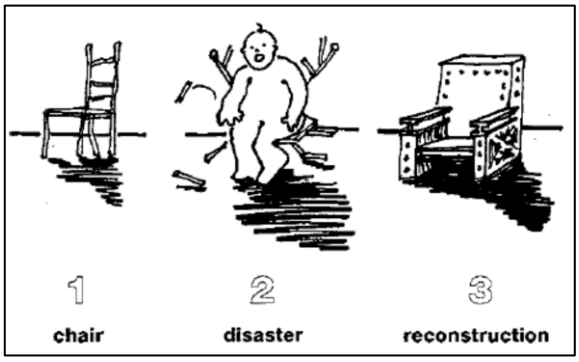


Source: USM Global Center for Sustainability Studies, 2013

What we DO NOT want:

- Actions taken in the aftermath of a disaster to:
  - Reconstruct **same as before**
  - Rebuilding the **pre-existing vulnerabilities**
  - Community in **same state** as before the disaster





Source: United Nations Disaster Management Training Programme (DMTP)

Principles Disaster Recovery and Rehabilitation

Recovery and rehabilitation is most effective:

- when communities and stakeholders recognize that it is a long-term process;
- when activities are integrated with risk management and sustainable development;
- when conducted with the participation of all affected stakeholders;
- when services are provided in a timely, fair and flexible manner.

Disaster Response & Recovery Areas

Governance, Leadership, Decision-making	Infrastructure
Health & sanitation	Waste management
Mental health	Mortality management
Public safely	Transportation
Communications	Business vitality
Emergency medical care	Education & training
Food security (procurement, distribution)	Children welfare
Housing	Public services & utilities
Environmental management	Infrastructure

DRM & Sustainable Development

Sustainability…

Systems science:

"A set of conditions and trends in a given system that can continue indefinitely."

Dictionary:

"The ability to endure"

"**Sustainable DEVELOPMENT**" means …

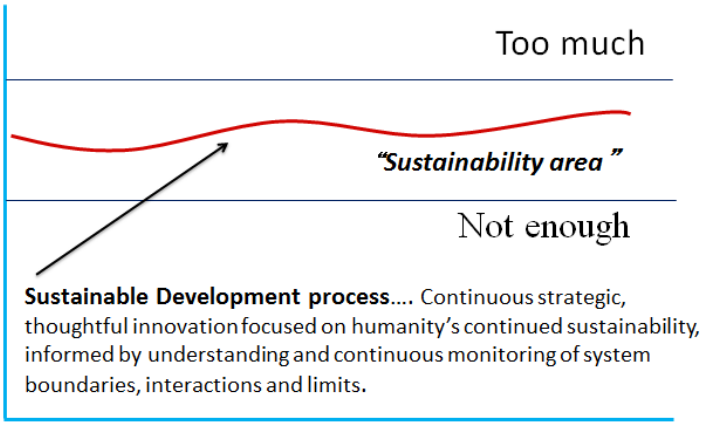
"A managed process of continuous innovation and systemic change in the direction of sustainability."

i.e. Creating systems that can endure (i.e. resilient, transformative, flourishing)

Source: AtKisson, "The Sustainability Transformation," 2010

Sustainability is . . .

… a set of conditions and trends in a given system that can continue indefinitely.



Sustainability is not about the Earth. The Earth is fine. Sustainability is about the survival of humanity (the human species) going forward- our children's and their children's future. This is what is at risk!

Four basic system conditions for sustainability:

- **Nature:** Living within the Earth's physical and biological limits;

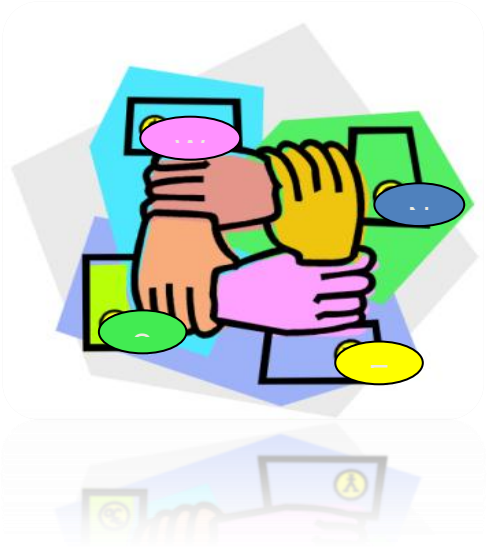
- **Economy;** Maintaining a vital, prosperous economy;

- **Society**: Supporting social stability, equity, and development;

- **Human Wellbeing**: Making individual opportunity, fulfillment, and happiness possible.

Some basic principles: An organization, community, or society will be sustainable if it…

1. … understands its own systems, *and the systems in which it is embedded;*



2. …. *understands and accounts for limits and system dynamics;*

3. … looks for *and responds to* long-term systemic trends that affect its ability to achieve its goals;

4. … changes internally to meet *and take advantage of* external conditions and trends;

5. … is *resilient* enough to withstand short-term shocks;

6. … does not undermine the conditions of its *own existence;*

The **Recovery Stage of DRM** is an Opportunity for taking a new development path, one that is sustainable. Do we have a map?

UN Conference on Sustainable Development : RIO+20

Official Negotiations

- 3rd Preparatory Committee Meeting (13-15 June) to agree the last version of the draft→ difficulty of reaching a consensus→ the PrepCom invited Brazil to conduct “preconference informal consultations in its capacity as host country”.

- **UN SUMMIT -HEADS OF STATE** (20/22 June): Plenary and adoption of the outcome document

Sustainable Development Dialogues:

Outcomes:

1. “The future we want” Outcome Document
2. 700 Voluntary Commitments

“The future we want” Outcome Document:

- 53 pages, 283 paragraphs;
- 6 sections:

I. Our common vision;

II. Renewing political commitment;

III. Green economy in the context of sustainable development and poverty eradication;

IV. Institutional framework for sustainable development;

V. Framework for action and follow-up

VI. Means of implementation.

1.4.2. “The future we want” Outcome Document

SECTION I: Our Common Vision

- Recognizing that poverty eradication, changing unsustainable and promoting sustainable patterns of consumption and production, and protecting and managing the natural resource base of economic and social development are the overarching objectives of and essential requirements for sustainable development.

The future we want" Outcome Document

SECTION III: Green economy

There are "**different approaches"** and tools available to achieve SD → **Green economy is one of the important tool**s,

Guidance on green economy policies:

- Reference to Rio Principles and past action plans
- national sovereignty over natural resources;
- participation by all relevant stakeholders;
- sustained and inclusive growth; Sustainable Consumption and Production;
- international cooperation on finance;
- indigenous peoples and non-market approaches;
- poverty eradication (**social protection floors).**

1.4.7. "The future we want"

B. SUSTAINABLE DEVELOPMENT GOALS (SDGS)

- Still firmly committed to MDGs but also recognize **utility of a set of SDGs** (based on Agenda 21 and the JPOI, Rio Principles);
- SDGs focused on **priority areas** selected on the Outcome Document;
- established an **intergovernmental process on SDGs** → working group will be constituted, to submit a proposal for SDGs to the UNGA;
- Need to assess **targets and indicators** for SDGs.

1.4.8. "The future we want" Outcome Document

VI. MEANS OF IMPLEMENTATION

A. **FINANCE**: need for significant **mobilization of resources for SD** → established an **intergovernmental process** to propose a SD financing strategy.

B. **TECHNOLOGY**: importance of access by all countries to environmentally sound technonology. (included technology trasfer to developing countries)

C. **CAPACITY BUILDING**: need for enhanced capacity building for SD → UN agencies invited to share knowledge and support cooperation

D. **TRADE**: international trade as engine for SD → need of rule-based, open, trading system

Each of the 17 Goals and 169 Targets represent our attempt to maintain or achieve certain system conditions that we think are required for sustainability.

Source: http://www.globalgoals.org/

The Global Goals for Sustainable Development

Disaster risk reduction references in goals and targets:

Goal 1. End poverty in all its forms everywhere

1.5 By 2030 build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.

Goal 2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture

- By 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality.

Goal 3. Ensure healthy lives and promote well-being for all at all ages

- 3.d Strengthen the capacity of all countries, particularly developing countries, for early warning, risk reduction, and management of national and global health risks.

Goal 4. Ensure inclusive and equitable quality education and promote life-long learning opportunities for all

- 4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

Goal 6. Ensure availability and sustainable management of water and sanitation for all

- 6.6 By 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

- Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

- 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

- 9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, LDCs, LLDCs and SIDS

Goal 13. Take urgent action to combat climate change and its impacts*

- 13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries.

- 13.2 Integrate climate change measures into national policies, strategies, and planning.

- 13.3 Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning.

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

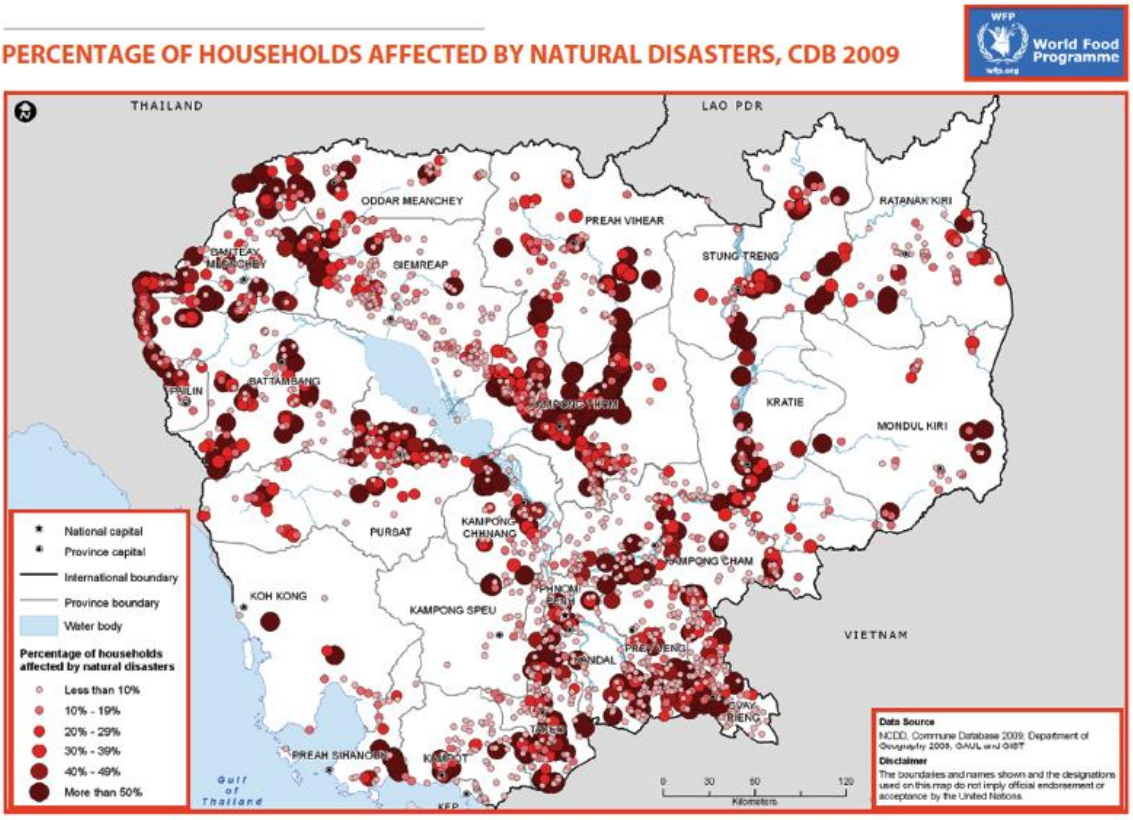
- 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration, to achieve healthy and productive oceans.

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

- 15.1 By 2020 ensure conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and dry lands, in line with obligations under international agreements
- 15.3 By 2020, combat desertification, and restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation neutral world.

Building in Sustainable Development into Disaster Recovery in Cambodia

Map of flood impacted households in Cambodia



Group Exercise – Disaster Recovery and Sustainable Development

Task:

- Each group take one region of Vietnam
- Take one of the Disaster Risk Reduction linked SDG targets and discuss and agree on the following:

    1. Why is this target important for this region in building resilience to disaster?
    2. What are the challenges faced in the region to achieve the target?

3. What are some recommendations that you would make to the central government to help achieve this target?

POST-DISASTER: DISASTER MANAGEMENT & POST-DISASTER STAGE:

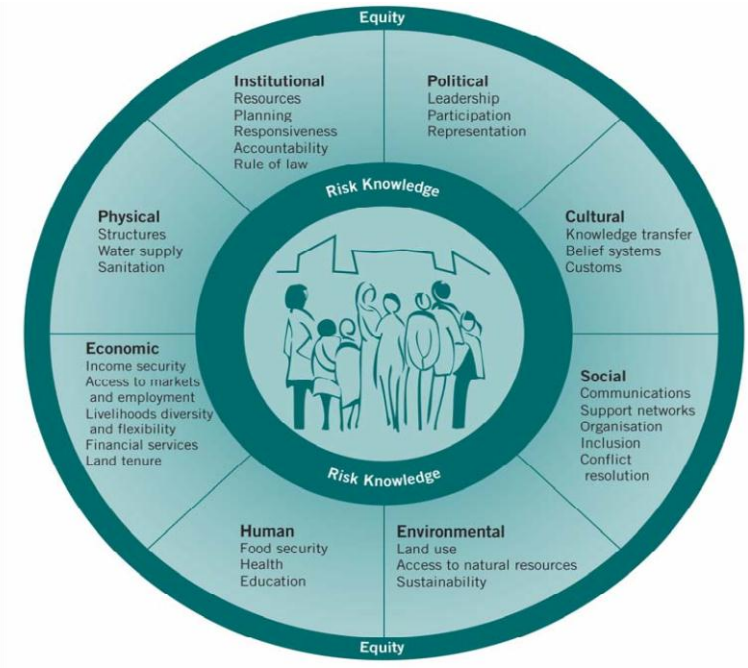
RESPONSE & RECOVERY: LINKING TO THE GOALS OF SUSTAINABLE DEVELOPMENT

by **Dr Suzyrman Sibly**

How do we respond, recover and rebuild to disaster in order to decrease risk and increase our resiliency in transforming our society to one that is sustainable in the long-term?

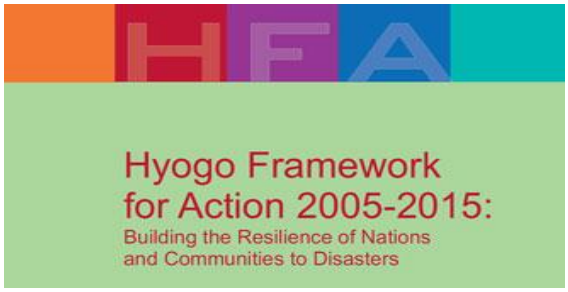
Photo: Tacloban, Philippines after Typhoon Haiyan 2013

Note: Key factors influencing resilience and decreasing disaster risk.



Source: Turnbull et al., 2013

Hyogo Framework for Action 2005-2015



- Hyogo Framework for Action 2005-2015.

- Building the resilience of nations and communities to disasters.

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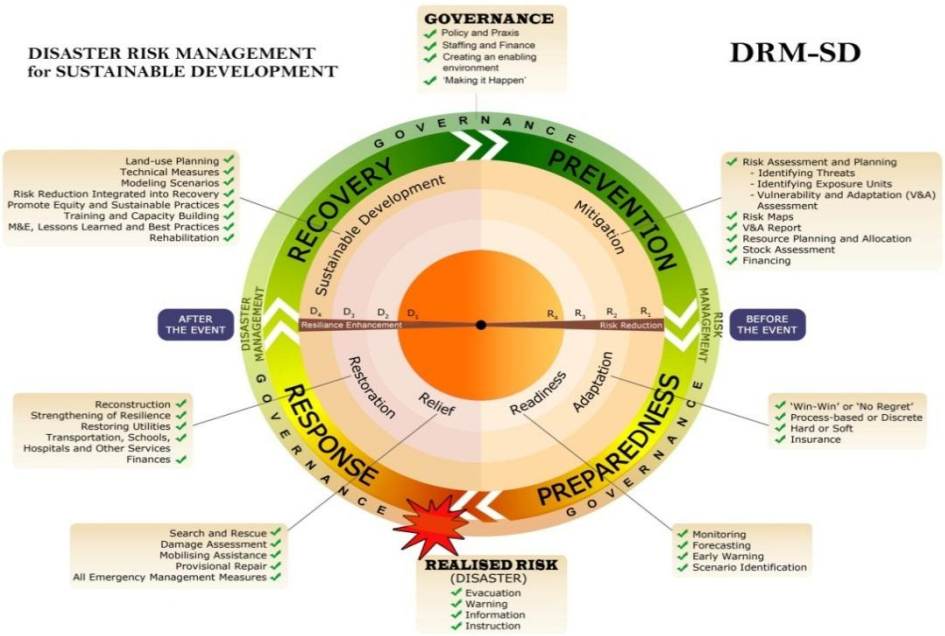
Disaster Risk Management Cycle

Source: The Hyogo Framework for Action (HFA)

Disaster Risk Management Model for SD from CGSS



Source: USM Global Center for Sustainability Studies, 2013

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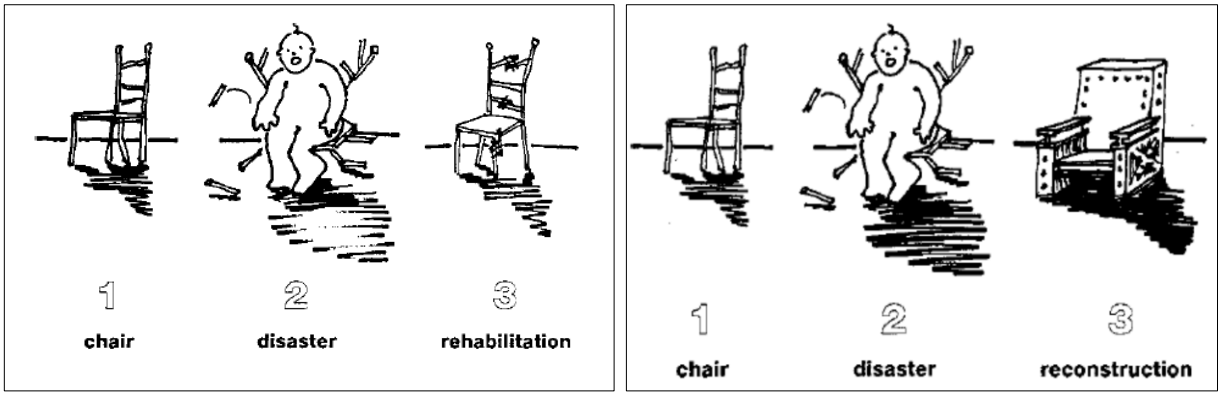
  - Rebuilding the **pre-existing vulnerabilities**
  - Community in **same state** as before the disaster



Source: United Nations Disaster Management Training Programme (DMTP)

Principles Disaster Recovery and Rehabilitation

Recovery and rehabilitation is most effective:

- when communities and stakeholders recognize that it is a long-term process;
- when activities are integrated with risk management and sustainable development;
- when conducted with the participation of all affected stakeholders;
- when services are provided in a timely, fair and flexible manner.

Governance, Leadership, Decision-making	Infrastructure
Health & sanitation	Waste management
Mental health	Mortality management
Public safely	transportation
Communications	Business vitality
Emergency medical care	Education & training
Food security (procurement, distribution)	Children welfare
Housing	Public services & utilities
Environmental management	Infrastructure

DRM & Sustainable Development

Sustainability:

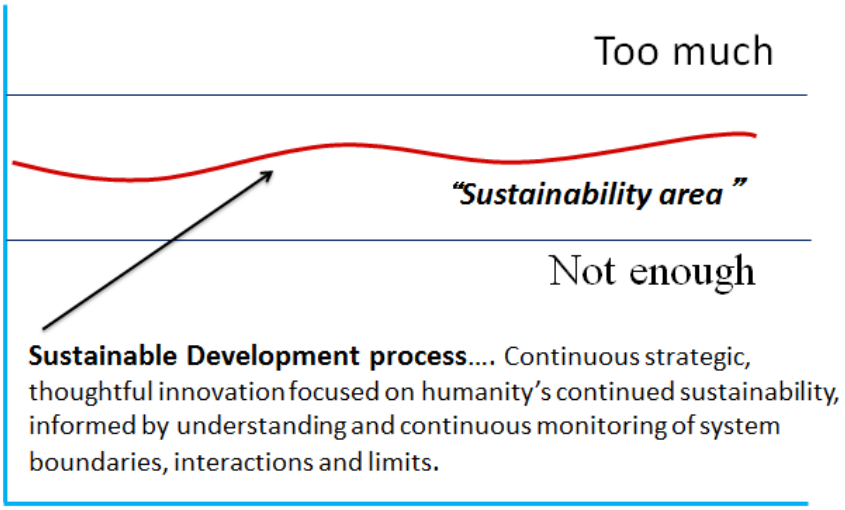
- *Systems science: "A set of conditions and trends in a given system that can continue indefinitely."*
- *Dictionary: "The ability to endure"*

Sustainable DEVELOPMENT" means …*"A managed process of continuous innovation and systemic change in the direction of sustainability."*

i.e. Creating systems that can endure (i.e. resilient, transformative, flourishing)

Source: AtKisson, "The Sustainability Transformation," 2010

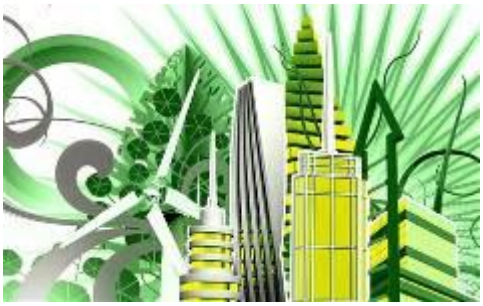
Sustainability is ***a set of conditions and trends in a given system that can continue indefinitely***.



Sustainability is not about the Earth. The Earth is Fine. Sustainability is about the survival of Humanity (the human species) going forward- our children's and their children's future. This is what is at risk!

Four basic system conditions for sustainability:

- **Nature**: Living within the Earth's physical and biological limits;



- **Economy;** Maintaining a vital, prosperous economy;

- **Society**: Supporting social stability, equity, and development;

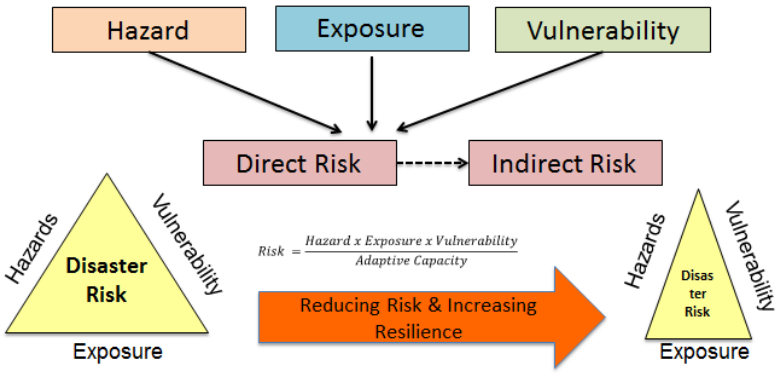
- **Human Wellbeing**: Making individual opportunity, fulfillment, and happiness possible.

Some basic principles: An organization, community, or society will be sustainable if it…

1. … understands its own systems, *and the systems in which it is embedded;*
2. …. *understands and accounts for limits and system dynamics;*
3. … looks for *and responds to* long-term systemic trends that affect its ability to achieve its goals;

4. … changes internally to meet *and take advantage of* external conditions and trends;
5. … is *resilient* enough to withstand short-term shocks;
6. … does not undermine the conditions of its *own existence;*

Hazard, exposure and vulnerability drive direct risk in Disaster Risk Management Analysis.



Source: Adapted and expanded from IIASA CATSIM model (Mechler et al., 2006)

UN Conference on Sustainable Development

Official Negotiations

3rd Preparatory Committee Meeting (13-15 June) to agree the last version of the draft→ difficulty of reaching a consensus→ the PrepCom invited Brazil to conduct “preconference informal consultations in its capacity as host country”.

UN SUMMIT -HEADS OF STATE (20/22 June):

Plenary and adoption of the outcome document.

Sustainable Development Dialogues:

Outcomes:

1) “The future we want” Outcome Document

2) 700 Voluntary Commitments

“The future we want” Outcome Document

- 53 pages, 283 paragraphs;
- 6 sections:
    I. Our common vision;
    II. Renewing political commitment;
    III. Green economy in the context of sustainable development and poverty eradication;
    IV. Institutional framework for sustainable development;
    V. Framework for action and follow-up
    VI. Means of implementation.

1.4.2. "The future we want" Outcome Document

SECTION I: our common vision

- Recognizing that poverty eradication, changing unsustainable and promoting sustainable patterns of consumption and production, and protecting and managing the natural resource base of economic and social development are the overarching objectives of and essential requirements for sustainable development.

1.4.4. "The future we want" Outcome Document

SECTION III: Green economy

There are "**different approaches"** and tools available to achieve SD → **Green economy is one of the important tool**s,

Guidance on green economy policies:

- Reference to Rio Principles and past action plans
- national sovereignty over natural resources;
- participation by all relevant stakeholders;
- sustained and inclusive growth; Sustainable Consumption and Production;
- international cooperation on finance;
- indigenous peoples and non-market approaches;
- poverty eradication **(social protection floors).**

B. SUSTAINABLE DEVELOPMENT GOALS (SDGS)

- Still firmly committed to MDGs but also recognize **utility of a set of SDGs** (based on Agenda 21 and the JPOI, Rio Principles);
- SDGs focused on **priority areas** selected on the Outcome Document;
- Established an **intergovernmental process on SDGs** → working group will be constituted, to submit a proposal for SDGs to the UNGA;
- Need to assess **targets and indicators** for SDGs.

1.4.8. "The future we want" Outcome Document

VI. MEANS OF IMPLEMENTATION

A. **FINANCE**: need for significant **mobilization of resources for SD** → established an **intergovernmental process** to propose a SD financing strategy.

B. **TECHNOLOGY**: importance of access by all countries to environmentally sound techn. (included technology trasfer to developing countries)

C. **CAPACITY BUILDING**: need for enhanced capacity building for SD → UN agencies invited to share knowledge and support cooperation

D. **TRADE**: international trade as engine for SD → need of rule-based, open, trading system

Each of the 17 Goals and 169 Targets represent our attempt to maintain or achieve certain system conditions that we think are required for sustainability.

Source: http://www.globalgoals.org/

The Global Goals for Sustainable Development

Disaster risk reduction references in goals and targets:

Goal 1. End poverty in all its forms everywhere

- 1.5 By 2030 build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters

Goal 2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture

- 2.4 By 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality

Goal 3. Ensure healthy lives and promote well-being for all at all ages

- 3.d Strengthen the capacity of all countries, particularly developing countries, for early warning, risk reduction, and management of national and global health risks.

Goal 4. Ensure inclusive and equitable quality education and promote life-long learning opportunities for all

4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

Goal 6. Ensure availability and sustainable management of water and sanitation for all

- 6.6 By 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

- 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.
- 9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, LDCs, LLDCs and SIDS.

Goal 13. Take urgent action to combat climate change and its impacts*

- 13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries
- 13.2 Integrate climate change measures into national policies, strategies, and planning.
- 13.3 Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning.

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

- 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration, to achieve healthy and productive oceans.

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

- 15.1 By 2020 ensure conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and dry lands, in line with obligations under international agreements.
- 15.3 By 2020, combat desertification, and restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation neutral world.

Sendai Framework

(a) Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020–2030 compared to the period 2005– 2015;

(b) Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020–2030 compared to the period 2005–2015;

(c) Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030;

(d) Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030;

(e) Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020;

(f) Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the present Framework by 2030;

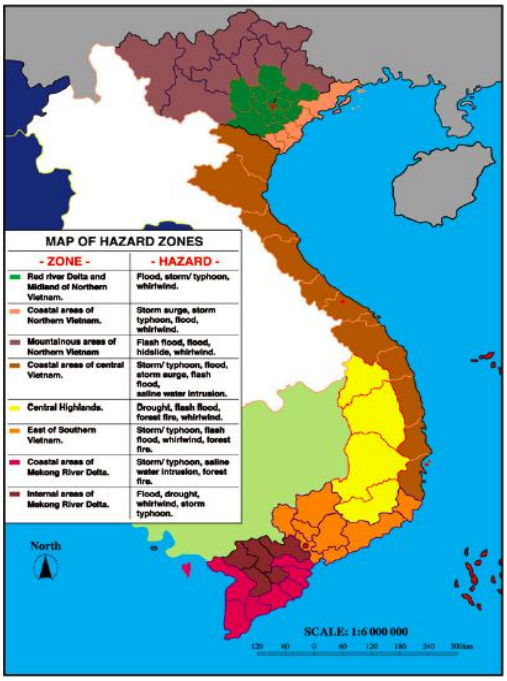
(g) Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030.

Building in Sustainable Development into Disaster Recovery-Exercise

After Immediate Rescue and Response, then what are the recovery priorities linking with SD?

Task:

- Each group take one region of Vietnam
- Given the disaster risk profile for the region, agree on the top 10 priorities for SD from the entire SDG Goal / target list that should be focused on in Disaster Recovery Plans for that region.
- Provide a Rationale for each priority…(i.e. why this particular SDG and target is a priority.)



For the North Vietnam:

- North Vietnam locates in the Southeast Asian monsoon area, which is subjected directly to hot and humid climate of Pacific and Indian Oceans. Therefore floods and rains frequently happen in river basins annually, causing serious flooding over the Red River Delta and the north midland region.

- Strategy of Vietnamese Government on flood management and mitigation for the regions of Red river Delta and the North Midland is to execute structural measures associated with nonstructural solutions, and measures of strengthening dyke systems, of diverging flood courses and of improving safety standards of disaster mitigation works.

For Central Vietnam:

- Severe storm with strong wind is often engaged with heavy rains, causing river water level rising and flood. In case a storm or tropical depression occurs together with a cold front, it can result in long and torrential rains, causing serious flood over river basins of the Central region.

- Strategy of the Vietnamese Government on disaster management for Central Viet Nam is to promote flood and storm prevention measures with the policy: “pro-active prevention, mitigation and adaptation”. Management and mitigation measures include construction of upstream reservoirs, of dyke systems. These works should be combined with irrigation systems for stabilizing agricultural production.

For the Mekong (Cuu Long) River Delta:

- A large area in the north of this region is subjected to inundation due to floodwater flows down from upstream Mekong River every year. Inundation time lasts from 2 to 6 months, with flood depth ranges from 0.5 to 4 meters. These conditions create a lot of difficulties in life and production of local people. On the other hand, floods bring about various benefits to local residents such as: soil enrichment of alluvium, soil washing, aquatic products …

- Strategy of disaster mitigation for the Mekong River Delta is “living with flood and flood control” with specific solutions such as planning of residential clusters, construction of irrigation systems for supplying clean water and preventing salt invasion, construction of low embankment system for preventing salt invasion.

TOWARDS DISASTER RESILIENT CITIES

GOAL: Focus on Solutions For Reducing Disaster RISK

ISLAND NATIONS

- BUILD ON CULTURAL DIVERSITY OF NATIONS IN THE REGION
- BUILD TECHNICAL AND POLITICAL CAPACITY FOR INCREASED COMMITMENT
- IMPROVE COMMUNICATIONS
- INCREASE AND IMPROVE PARTNERSHIPS
- FOCUS ON PRACTICAL APPLICATIONS AND INNO-VATIVE IMPLEMENTATION
- DEVELOP FINANCIAL RESOURCES
- INCREASE RESILIENCE OF COMMUNITIES BY REDUCING VULMERABILITIES
- IMPROVE PUBLIC EDUCATION AND AWARENESS

TOWARD DISASTER RESILIENT CITIES

GOAL: Focus on Solutions For Reducing Disasters

SUB-SAHARAN AFRICA

- INCREASE PUBLIC AWARENESS
- REDUCE PHYSICAL, SOCIAL, AND ENTERPRISE VULNERABILITIES
- ACCELERATE EDUCATION (WITH FOCUS ON RISK REDUCTION TECHNIQUES
- INCREASE CAPACITY TO MITIGATE DAMAGE/LOSS OF ECOLOGICAL SYSTEMS
- ENHANCE PUBLIC HEALTH
- IIPROVE CAPACITY FOR PERFORMING LOSS ESTIMATIONS
- ESTABLISH AN AFRICAN CENTER OF EXCELLENCE ON SUSTAINABILE DEVELOPMENT
- ESTABLISH SUB-REGIONAL CENTERS OF EXCELLENCE ON SUSTAINABILE DEVELOPMENT

TOWARD DISASTER RESILIENT CITIES

GOAL: Focus on Solutions For Reducing Disasters

CARIBBEAN BASIN NATIONS

- INCREASE PUBLIC AWARENESS OF SOCIAL AND PHYSICAL RISKS
- INCREASE UNDERSTANDING OF RISKS IN EVERY NATION
- ASSESS AND REDUCE VULNERABILITIES ON ISLAND-SPECIFIC SCALES
- ASSESS AND REDUCE VULNERABILITIES ON COMMUNITY SCALES
- ASSESS AND REDUCE VULNERABILITIES ON NATIONAL SCALES
- ASSESS AND REDUCE VULNERABILITIES ON REGIONAL SCALE
- CONTINUE BUILDING BASIN-WIDE PARTNERSHOPS

TOWARD DISASTER RESILIENT CITIES

GOAL: Focus on Solutions For Reducing Disasters

EUROPE

- IMPROVE EARLY WARNING AND EARLY RESPONSE
- IMPROVE EMERGENCY MANAGEMENT
- REDUCE VULNERABILITIES TO NATURAL AND TECHNOLOGICAL HAZARDS
- INCREASE PROTECTION OF PEOPLE AND CULTURAL HERITAGE
- ADVANCE SCIENTIFIC AND TECHNOLOGICAL PROGRAMS
- EMPOWER POLLITICAL WILL TO CHANGE POLICIES AND PRACTICES
- TOWARDS SUSTAINABLE SOCIETAL DEVELOPMENT
- CREATE A FORUM ON DISASTER RISK MANAGEMENT

TOWARD DISASTER RESILIENT CITIES

GOAL: Focus on Solutions For Reducing Disasters

MEDITERRANEAN REGION

- INCREASE PUBLIC AWARENESS IN EVERY NATION
- IMPROVE EMERGENCY MANAGEMENT
- REDUCE VULNERABILITIES TO NATURAL AND TECHNOLOGICAL HAZARDS
- INCREASE PROTECTION OF PEOPLE AND CULTURAL HERITAGE
- ADVANCE SCIENTIFIC AND TECHNOLOGICAL PROGRAMS
- EMPOWER POLITICAL WILL TO CHANGE POLICIES AND PRACTICES
- TOWARDs SUSTAINABLE SOCIETAL DEVELOPMENT
- CONTINUE IMPROVING PARTNERSHIPS FOR DISASTER RISK REDUCTION

TOWARD DISASTER RESILIENT CITIES IN EACH REGION

GOAL: Focus on Solutions For Reducing Disasters

ASIA

- IMPROVE PUBLIC AWARENESS
- IMPROVE EMERGENCY MANAGEMENT
- REDUCE ALL URBAN VULNERABILITIES
- FORMATION OF CENTERS OF EXCELLENCE
- IMPROVE ALL ASPECTS OF DATA MANAGEMENT

TOWARD DISASTER RESILIENT CITIES

GOAL: Focus on Solutions For Reducing Disasters

THE AMERICAS

- IMPROVE CAPABILITY TO AVOID DISASTERS AS PART OF LAND-USE PLANNING
- IMPROVE PUBLIC AWARENESS AND EDUCATION
- IMPROVE CAPABILITY TO MATCH STRUCTURAL DESIGN WITH HAZARD DEMAND
- IMPROVE HAZARD CHARACTERIZATION MODELS AND MAPS
- IMPROVE EMERGENCY PREPAREDNESS, RESPONE, AND RECOVERY
- DEVELOP COMMUNITY REDUCE ALL URBAN VULNERABILITIES
- IMPROVE DISASTER SCENARIOS
- IMPROVE ENVIRONMENTAL VULNERABILITY AND RISK ASSESSMENTS
- IMPROVE MITIGATION AND PREPAREDNESS MODELS TO MANAGE RISK
- IMPROVE DATA COLLECTION AND MANAGEMENT
- IMPROVE THE NEXT GENERATION OF BUILDING CODES AND STANDARDS
- IMPROVE PROCESS FOR SHARING KNOWLEDGE AND EMERGING TECHNOLOGIES
- IMPROVE UNDERSTANDING OF INTERACTION OF HAZARD AND BUILT ENVIRONMENTS
- ENHANCING MULTIPLE EFFORTS IN CAPACITY BUILDING
- INCREASED COLLECTION AND SHARING OF KNOWLEDGE
- CLOSE “IMPLEMENTATION GAP”

TOWARD DISASTER RESILIENT CITIES

GOAL: Focus on Success; FAILURE IS A LOSS FOR EVERYONE!

INNOVATIVE IMPLEMENTATION IS THE KEY

- OUTREACH BY KNOWLEDGE PRODUCING ORGANIZATIONS
- COUNTER-DISASTER TRAINING OF RESPONSIBLE PERSONS
- PUBLIC AWARENESS TO GAIN SUPPORT FOR SUSTAINED IMPLEMENTATION
- COORDINATED BUSINESS POLICIES AND PRACTICES
- COORDINATED GOVERNMENT POLICES, PRACTICES, AND LEGISLATION
- IMPROVED TRANS-BORDER LINKAGES BETWEEN COUNTRIES
- IMPROVED LEVERAGING OF EXISTING INTERNATIONAL AGREEMENTS
- COMMUNICATION!

LAO PDR'S STATUS IN DISASTER RISK MANAGEMENT FOR SUSTAINABLE DEVELOPMENT (DRM-SD) CAPACITY BUILDING by Assoc. Prof. Dr. Bouadam Sengkhamkhoutlavong

Country Profile

- Lao People's Democratic Republic (Lao PDR) locates in Southeast Asia peninsula, sharing border with China, Vietnam, Cambodia, Thailand and Myanmar
- It is a land locked, elongated country of approximately 236,800 square kilometers of which 80% is mountainous in that 47% is rain forest.
- Population is 6.8 million, 47 minorities groups, the population density is 24 / km2
- Life expectancy at birth is 64
- (61 for male and 68 for female)
- Literacy rate 77% (> 15 year old)

Hazards & Disaster in Lao PDR

Natural disaster:

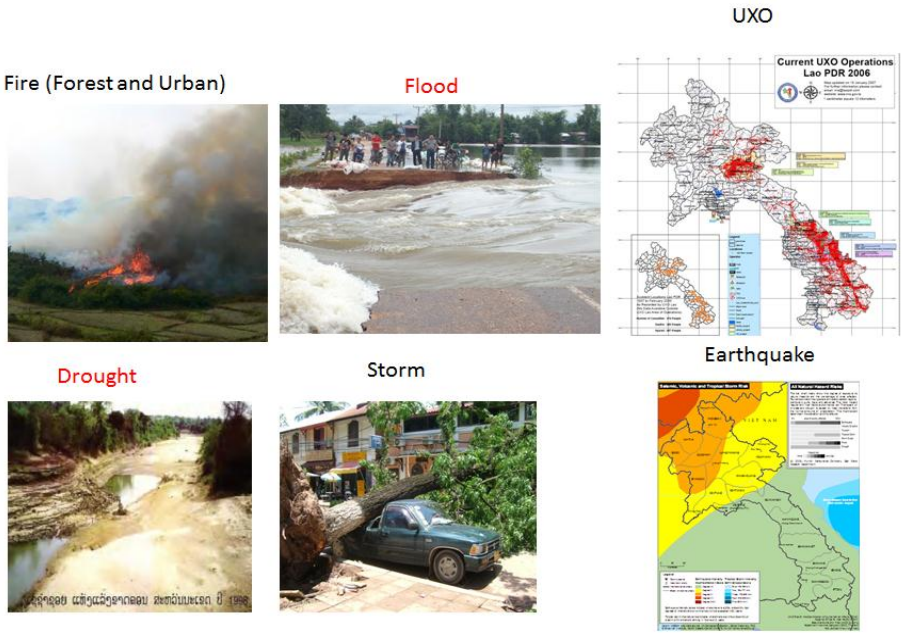
- Flood (river flood and flash flood)
- Drought

- Storm
- Landslide
- Epidemic (human, animal disease), including birth flu
- Pest
- Earthquake

Man-made disaster:

- UXO
- Fire (forest, houses)
- Accident (land, air, water)

Major Disasters in Lao PDR - Great Impacts on Sustainable Development



Flood and drought are the major natural disaster in Laos. Almost every year these major disasters occurred and killed people lives and damaged to infrastructure of agriculture,

transportation, public health, school, houses, water, sanitation and many more, these disasters also contributed a great impact to country development.

Flood Data 1966 – 2008

S. No	Year	Type of Damage	Damage cost (USD ,000)	Place of Damage
1	1966	Large Flood	13,800	Central
2	1968	Flood	2,830	Central and Southern
3	1969	Flood	1,020	Southern
4	1970	Flood	30	Central
5	1971	Large Flood	3,573	Central
6	1972	Flood and Drought	40	Central
7	1973	Flood	3.7	Central
8	1974	Flood	180	
9	1976	Flash Flood	9,000	Central
10	1978	Large Flood	5,700	Central and Southern
11	1979	Flood and Drought	3,600	Northern and Southern
12	1980	Flood	3,000	Central
13	1981	Flood	682	Central
14	1984	Flood	3,430	Central and Southern
15	1985	Large Flood	1,000	Northern
16	1986	Flood and Drought	2,000	Central and Southern

17	1990	Flood	100	Central
18	1991	Flood and Drought	3,650	Central
19	1992	Flood, Drought and Fire	302,151.20	Central (F) and Northern (D)
20	1993	Flood and Drought	21,827.93	Central and Southern
21	1994	Flood	21,150	Central and Southern
22	1995	Flood	15,000	Central
23	1996	Large Flood and Drought	10,500	Central
24	1997	Flood and Drought	1,860.30	Southern
25	1999	Flood	7,450	Central
26	2000	Flood	6,684.23	Central and Southern
27	2001	Flash Flood	808.5	Central and Southern
28	2002	Large Flood, Flash Flood and Landslide	14,170	Northern, Central and Southern
29	2004	Flood	750.399	Southern
30	2005	Flash Flood and Landslide	1,316.58	Central and Southern
31	2006	Flood	3,636	Central and Southern
32	2007	Flash Flood	8,056	Northern, Central and Southern
33	2008	Large flood and Flash Flood	4,384.40	Northern and Central

Drought Data from 1967 – 2003

S. No	Year	Type of Damage	Damage cost (USD,000)	Place of Damage
1	1967	Drought	5,120	Central and Southern
2	1975	Drought	N/A	Central
3	1982	Drought	N/A	N/A
4	1983	Drought	N/A	N/A
5	1987	Drought	5,000	Central and Southern
6	1988	Drought	40,000	Southern
7	1989	Drought	20,000	Southern
8	1998	Drought	5,763	Northern and Southern
9	2003	Drought	16,500	Central And Southern

Overall Affected by T. Ketsana 2009'

Province : 5

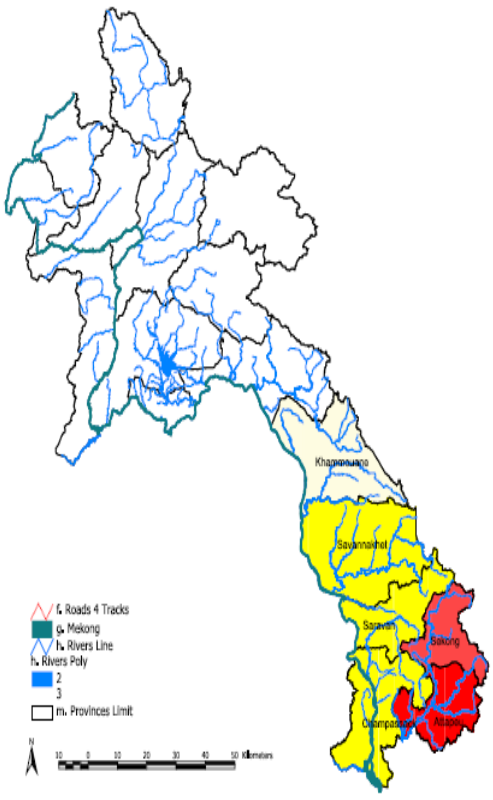
District : 43

Village : 822

Population : 272.943 people

Dead : 28

Total damage cost around 58 million USD



Flood Affected by TS HAIMA & TS NOCK –TEN 2011

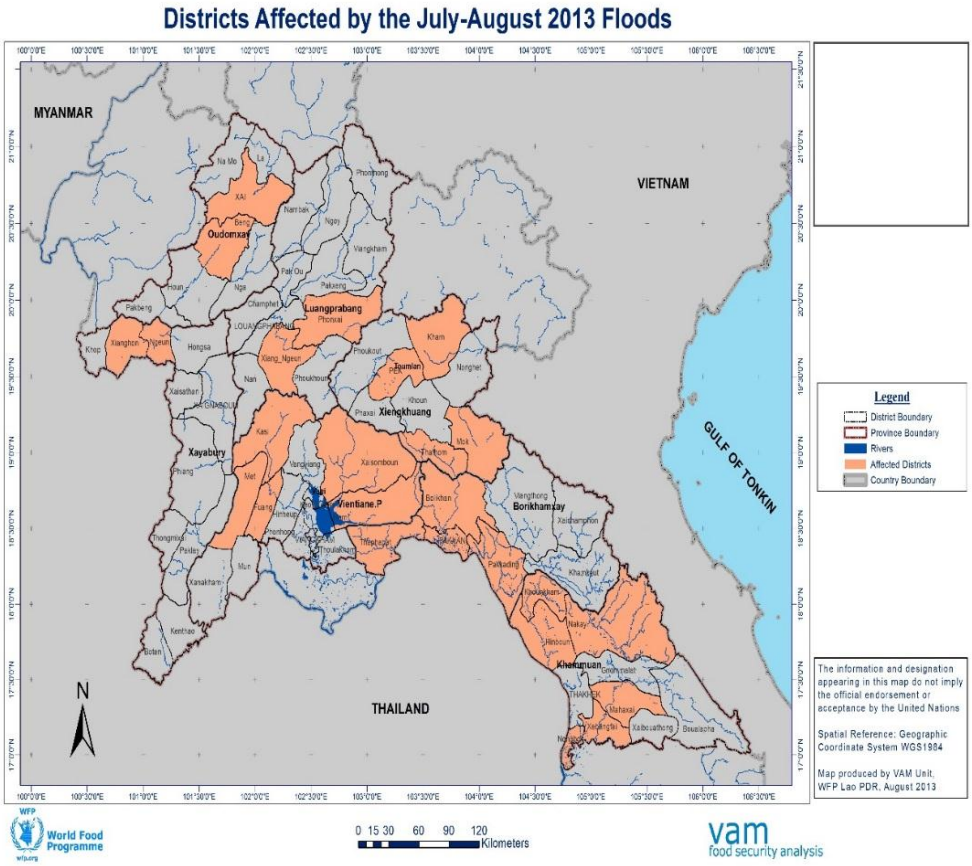
- Almost 12 provinces affected
- 429.954 people (Women 218.154 persons), 82. 493 households, 1.790 villages, 96 districts and 42 persons were killed.

- The flood also severely damaged housing of people, basic infrastructures of agriculture, public work and transport, health centers, schools electricity, water supply, natural water pipe, latrines, tourism sites, industry and trading and many more.

- The most severely affected provinces are: Xiengkhuang, Khammuane, Champasack Sayabuly , Vientiane and Bolikhamxay.
- The total damages cost estimate around 1,764,547,062,641 kips.

Flood 2013

- Affected 62 districts, 1,159 villages, 12 provinces.
- 353,966 people affected, 25 dead, 1 missing, 77 injured
- Estimated cost damages around **493**,**787**,**700**,**530** kip



Assessment & Analysis

Lao PDR faces significant threats from climate change given its dependence on agriculture and natural resources. Lao PDR subject to floods and droughts with significant impact on Agriculture, forestry, water resources, health and economic growth.

Impact assessments had concluded recent regional changes in temperature have had discernible impact on the country's physical and biological ecosystems, and that the frequency and severity of floods and drought are on the rise.

Government Policies, Programmes and Strategies

Lao PDR has set up institutional mechanisms and policy frameworks to address climate change.

- Lao PDR acceded to the UNFCCC in 1995,
- Ratified the Kyoto Protocol in 2003.
- In 2008, Lao PDR established a National Steering Committee on Climate Change and National Climate change Office to follow up on its international commitments

Three main elements form the policy framework for climate change interventions:

- The National Adaptation Programme of Action (NAPA), submitted to UNFCCC in May 2009, forms the first element of the framework. The NAPPA set four criteria for prioritizing climate change adaptation projects. These were the capacity to deal with different degrees of severity in the impact from climate change, the contribution to poverty reduction, the linkages with other multilateral environmental agreements, and

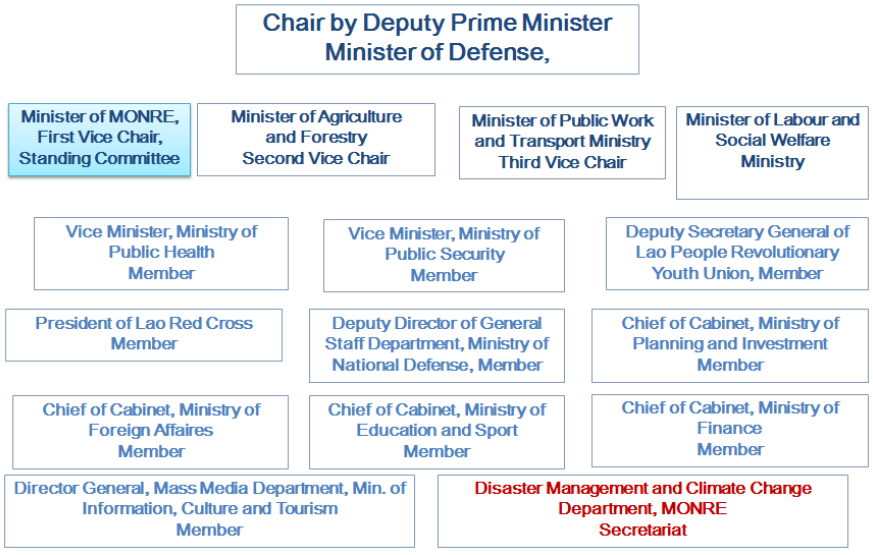
the value for economy and society. The first five-year NAPPA project was launched in 2011.

- Second element is the National Policy on Climate Change (NSCC), which was approved in early 2010. The NSCC identifies seven priority areas for adaptation and mitigation: agriculture and food security; forestry and land use change; water resources; energy and transport; industry; urban development; and public health. The NSCC also ensured that climate change was streamlined into Lao's Seventh NSEDP (2011-2015).

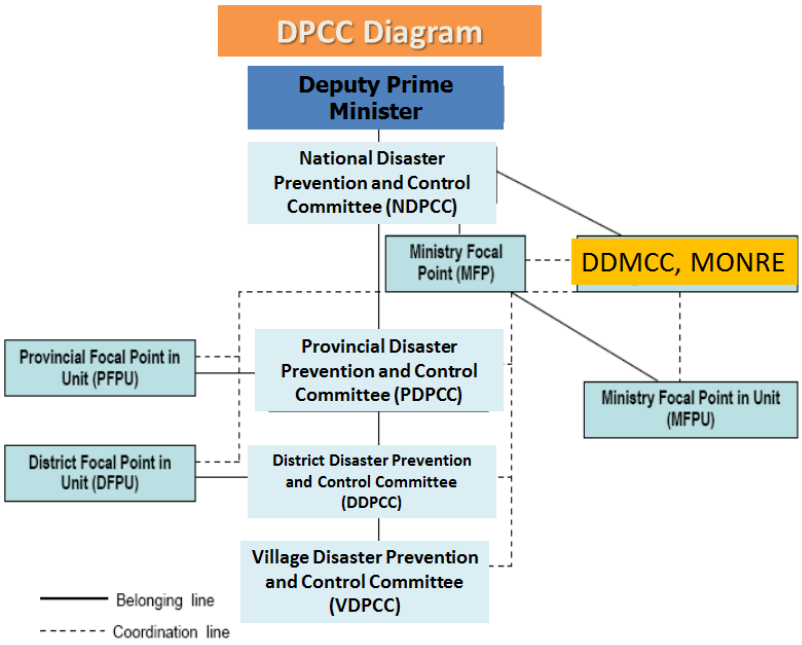
- The third element, the National Action Plan on climate change, was launched in April 2013 by ministry of natural resources and environment. Its aims to translate the NSCC into action.

Adaptation strategies focus mainly on water, agriculture and disaster risk management, with climate information services. The gaps in current adaptation programs include energy and transport, urban areas, public health and gender.

National Disaster Management Committee (Prime Minister Decree No. 220/PM,28.8.2013)

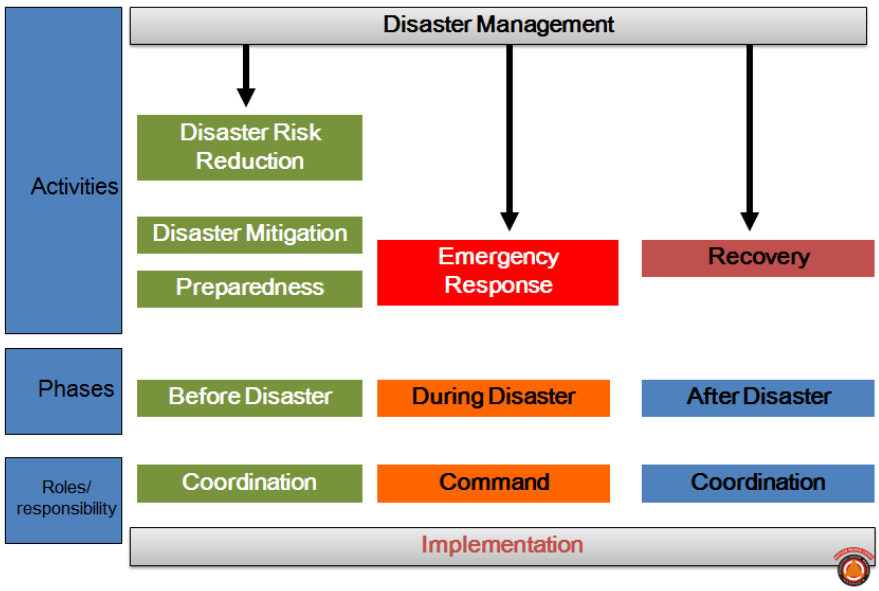


The government had reformed the DM institution and issued the new Prime Minister Decree No. 373, October 21, 2011. under this decree, DM committee has been strengthened and more high level institution, and change the name from DM committee to be Disaster Prevention and Control Committee.The committee at national level is chaired by Deputy Prime Minister, and has 3 deputy chaires.

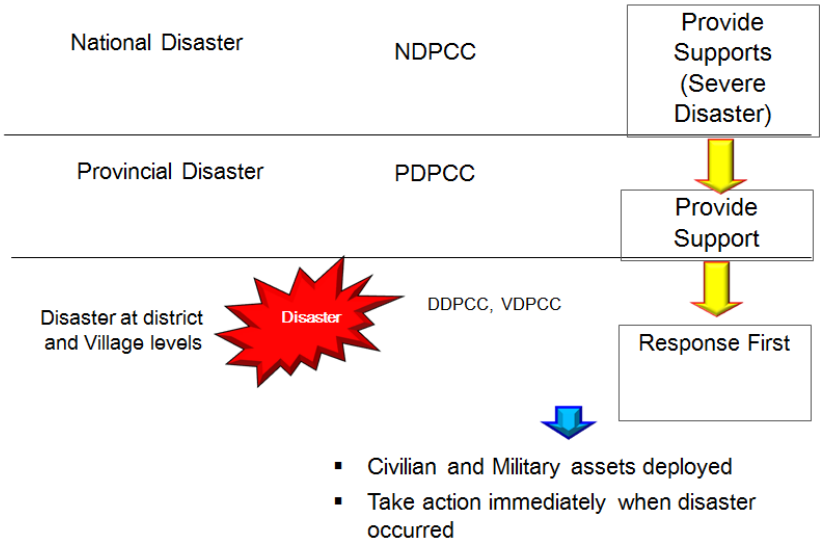


This is the DM structure in the country. Showing the coordination mechanism among DM institution from national to local and community level. As may see the NDMO is in charge to be central coordinate with DM focal points at Ministry level and line department at local level, in three phases before, during and after disasters.

Disaster Management and Roles of NDPCC



Policy on Disaster Response

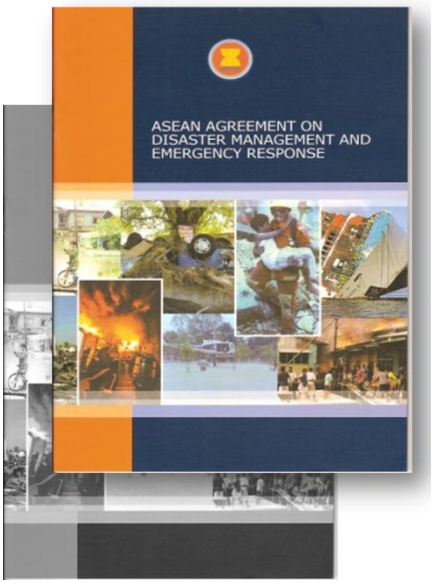


Disaster Emergency Response

- The DPCC Committees at all levels is the lead
- NDMO tasks:
  - Closely coordinate with DM focal point in Line Ministries, NDMO at local level to get update information on disaster situation, make analysis and report to NDMC for guiding response
  - Coordinate and cooperate with internal organization in mobilization of resources for emergency response as well as the join assessment
- Emergency Operating Center had been set during the Emergency like Ad-hoc center
  - Nationally at the Meeting room of Deputy Prime Minister, Ministry of Defense
  - Local level, at the meeting room of Governor's office
- Inter-Agency Contingency Plan – IACP
  - EOC set at UN House (the meeting room)
  - NDMO involve in IASC, Inter-Cluster Coordination Group (ICCG), Emergency Task Force (ETF), Information Management Network (IMN)

Disaster Preparedness and Emergency Response

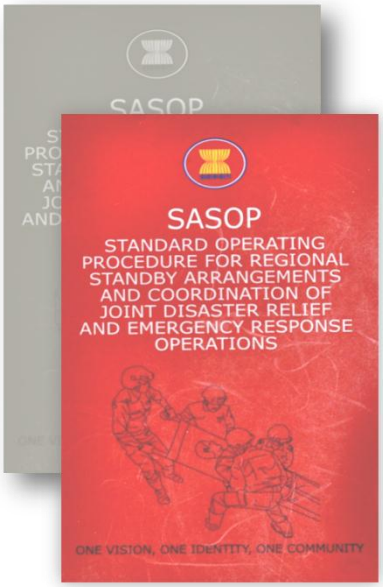
- Annual disaster preparedness and response plan of NDPCC
    - Roles and responsibility identified
    - Stockpiling and equipment
- Response Capacity
    - Search and Rescue Team
    - Medical Mobile Team
    - Etc…



AADMER provides a common platform for a more united and coordinated RESPONSE toward disasters within the region.

Signed in July 2005, ratified by all ten countries in ASEAN, entered into force on 24 December 2009
Objective: Reduce disaster losses in ASEAN region, and jointly respond to disaster emergencies
A legal framework for all ASEAN Member States and serves as a common platform in responding to disasters within ASEAN
ASEAN Coordinating Centre for Humanitarian Assistance (AHA Centre) as the operational coordination body and engine of AADMER

AADMER also requires the development of an effective Standard Operating Procedure for Regional Standby Arrangements and coordination of joint disaster relief and emergency response operation (SASOP).



Guides and templates to initiate the establishment of the ASEAN Standby Arrangements for Disaster Relief and Emergency Response
Procedures for joint disaster relief and emergency response operations
Procedures for the facilitation and utilisation of military and civilian assets and capacities,(personnel, transportation and communication equipment, facilities, good and services, and the facilitation of their trans-boundary movement)
Methodology for the periodic conduct of the ASEAN regional disaster emergency response simulation exercises (ARDEX) which shall test the effectiveness of this procedures

AHA Centre's Response to People Affected by Lao Flood and Landslide in August 2013 :

Transport of Relief Items

200 ASEAN Family Kits

Coordination with NDMO of Lao PDR

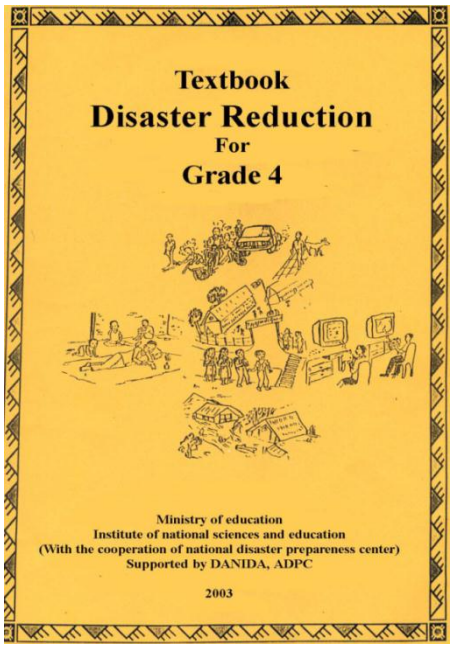
The Goals of DM Strategy Plan to 2020

1. Making Lao Society Safer and minimizing the impact of Disaster to people's life, country economy, government and population Property.
2. To timely assist to the victims of disaster helping they mitigate disaster impact and quick return to normalcy.
3. Building completed legal system on disaster management and prevention of disaster impact to individual, community, society and country economy.
4. Making disaster management concept and environmental protection as unique to development and becoming cultural perception of society.

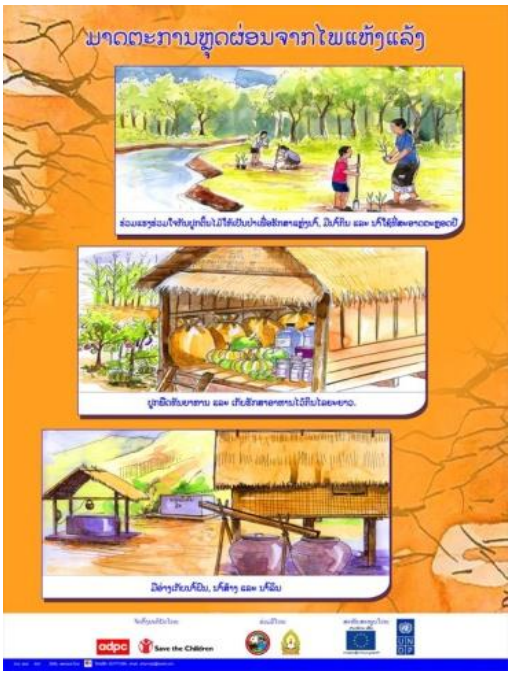
A Self-Monitoring & Reporting Mechanism on Education Policies & Plans for DRR for Sustainable Development

Sections	Results
I. Disaster risk assessment	DRR analysis frameworks not developed
II. Policies for risk reduction	**National level** - Seventh National Socio-economic Develop Plan (NSEDP) - National Plan for DRR - Climate Change Action Plan - Law on Environmental Protection (2012) - Strategic Plan on Disaster Risk Management in Lao PDR 2020 **MoES level** - ECDM, Department of Finance, MoES. (2009). School Construction Guidelines. - Comprehensive School Safety (CSS) Framework (Save the Children, UNICEF, UNESCO, INEE, Childfund, Plan International, World Vision, ADRRN, SEAMEO) (2012)
III. a. Education sector plans for risk reduction	- Initially introduction/orientation in risk prone provinces funded by MoES and International Organizations (e.g Sayaboury, Luangprabang, Oudomxay)
III. b. Implementation of priority DRR programmes	- NGO pilot programs in Khammuane (ADPC), Sayaboury (SCI), Bokeo (Plan), Vientiane province (Oxfam) since 2007 in primary schools. - MoES conducted a workshop to increase provincial level understanding of disaster risk reduction (Xiengkhuang, Huaphan, Luangprabang, Vientiane Capital and Champasack)
III. c. Teaching and learning	- Bring in and practice the concept of Education for sustainable development in 33 Associated school Project Network including 2 Teacher Education Institutions, 8 Primary schools and 23 secondary schools in five provinces) - DRR integrated into primary school (grade 3, 4,5) and lower secondary school (grade 6,7,8) for infusion into the 20% local content.

Textbook & teacher's guide:



Supplementary readings & posters:



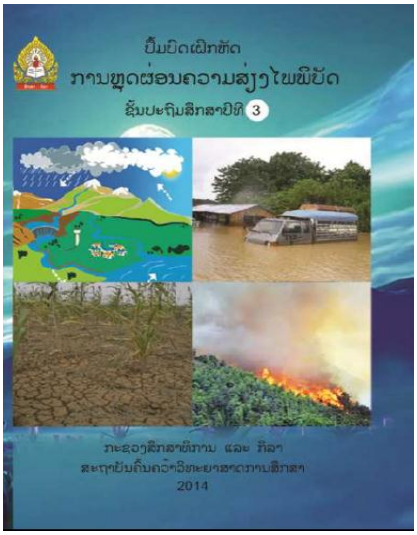
IV. Organizational arrangements and coordination	- National Disaster Management Committee established (Prime Minister's decree No 158 dated 23 Aug 1999) chaired by Deputy Prime Minister. - Disaster Risk Management Committee formed (Ministerial decree No. 2882/MOE.11 dated 24 Aug 2011) chaired by Deputy Minister of MoES - Established a MoES focal point unit and Appointed a Disaster Management (DM) contact person in MoES/ Cabinet Office.
V. Costing and financing	DRR activities haven't been costed and included in MoES' s overall budgets and plans.
VI. Monitoring & Evaluation	DRR indicators do not exist and are not used to monitor implementation progress.
VII. Capacity Development	Small scale of policy makers, planners, officials, teacher educators are familiar with DRR and with policy and practice of education in emergencies.

Significant Progress

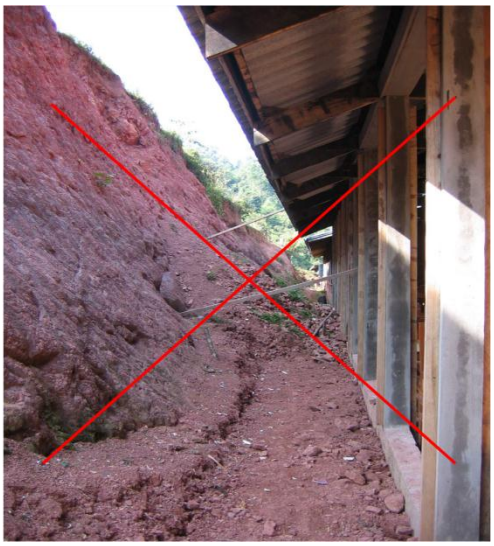
1. Established of DDMC at All Districts.
2. Establish DM focal points and contact persons in all major government agencies, units, privates, factories and other.
3. Enhance Capability and Building information dissemination to all 142 districts of Country.
4. Develop early warning information receiving points at risky to disaster villages.
5. Establish storages at provinces and some vulnerable to disaster districts.
6. Continue sustainable public awareness and education programs through media
7. Expand DM training in all sectors at various level
8. Organizing drills and simulation exercises with participation of emergency rescue teams of sectors and population.
9. Enhance capability on cooperation with ASEAN, region and international on exchanging of expertise, information on DM and join implementing projects, simulation exercises and relief drills.
10. New Prime Minister Decree No 220/PM dated 28/8/2013 on National Disaster Prevention and Management Committee
11. Drafting new TOR of Committee and members
12. Drafting National Disaster Risk Management Strategies 2016-2020
13. Drafting a new decree on Disaster Risk Management Committee in MoES, its TOR and members
14. Appointed two contact persons at MoES & revising TOR of a focal point unit within MoES.
15. Drafting MoES disaster risk management plan
16. Planning to integrate DRR into Education and Sport Development Plan (2016-2020)
17. Improving our system and process for data collection on damage after a disaster

18. Ministry of Finance dedicated nearly USD10,000 to discuss the policy implications of integrating DRR into the national school curriculum, and to fund the training of the focal points on DM.
19. Supplied zinc roofing for schools affected by natural disaster (approximately USD250,000)

Workbooks on Disaster and Risk Reduction are being piloting in 5 provinces:



443 schools were audited for school safety and quality in 6 provinces.



Usefulness of a Self-Monitoring & Reporting Questionnaire

- A comprehensive monitoring tool
- A practical guide for sector planning (identifying gaps and needs)
- A good self-study reference

Challenges & Opportunities

***The main challenges lie in financial and capacity constraints*.** There is a need to improve the knowledge base with respect to climate modeling, potential impacts and mitigation and adaptation strategies. The still low levels of public awareness on climate change issues in another challenge, although this has improved over the past decade. Cross-sectoral coordination is another area that needs strengthening.

Limitation and Challenges

- Limited/lack of resources both human and financial
- Limited knowledge on DRR and management at the central/local/community levels.
- Many of the worst hit areas by disasters are very remote and difficult to reach.

- Lack of monitoring and assessment
- Lack of baseline data on current school condition

Conclusion

- Disaster Management is essential. There is a need to strengthen National Disaster Management Strategies by:
  - Develop a comprehensive Disaster Management Strategy for Lao PDR
  - Build the capacity of institutions dealing with DM
- Building community disaster preparedness and response capacity are particularly important.

Recommendations

- University should consider how best to provide coursework in DRR, DRR research project should be provided.
- Develop strategic plan on disaster management in education sector
- Use school block grant to support school disaster risk management
- Annual national meeting on DRR management
- Consultation meeting with concerned government agencies and international organizations
- Monitoring and evaluation

CAMBODIA CLIMATE CHANGE STRATEGIC PLAN

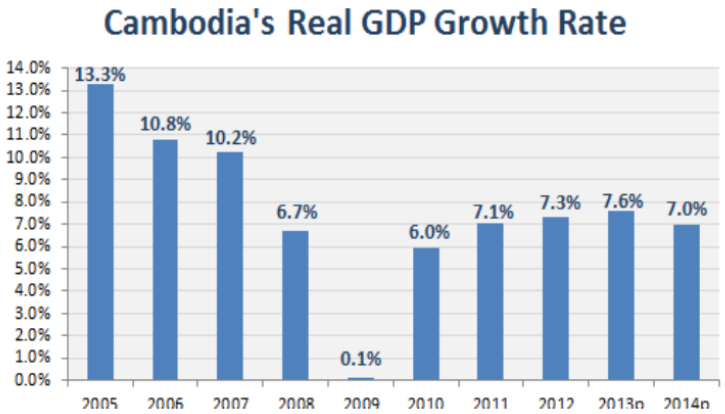
by Dr. Chhoeuth Khunleap & Mr. Seav Sovanna

Introduction to Cambodia

Cambodia has an area of 181,035 square kilometers with more than 15 millions people.

- It borders near by Thailand, Laos and Vietnam.
- This tropical country is dominated by monsoons (Wet and Dry).
- Temperature range from 21 to 35 0C(Low in Rainy season and High in Dry season)

The Gross Domestic Product(GDP)



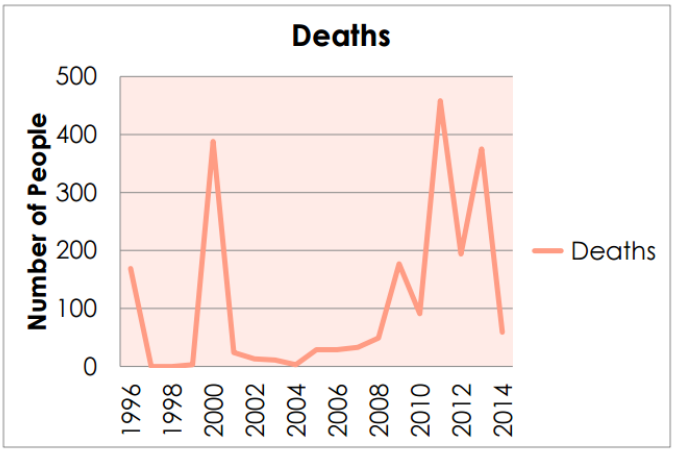
Main Natural Disaster

- **Flood**
  - Mekong flood
  - Flash flood
- **Drought**
- **Storm surge**
- **Strong wind**

- **Lightning**

Flood & Flash Floods in Cambodia (2011)

Number of Deaths (1996-2014)



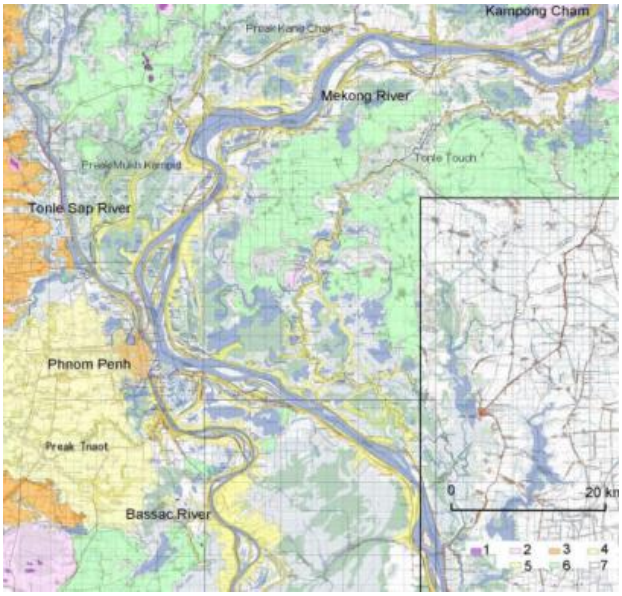
Types of Floods in Cambodia

- Mekong Floods: are caused by the overflow of Mekong tributaries and Tonle Sap river, inundating the provinces of Kampong Cham, Kratie, Kandal, Prey Veng, Stung Treng, Svay Rieng and Takeo.
- Flash Floods are caused by heavy rainfall in its river basins or by typhoons or storms affected from the neighboring countries. During the monsoon season, Cambodia experiences flash floods usually after heavy rainfall.

Water & River System in Cambodia

1) Mekong River which bisects Cambodia about 500 km2.

2) Bassac River which is splitted from the Mekong at Phnom Penh, flows parallelly down into the South China Sea.

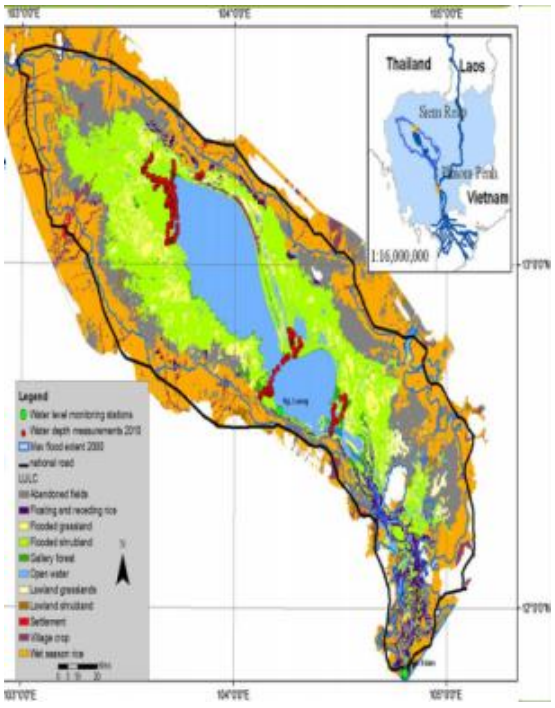


3) Tonle Sap and Great Lake with its tributaries, occupy about 80% of Cambodia.

Mekong River

- World's 12th longest river system.
- Total length of 4,500 km, a drainage area of 795,000 sq. km and an average annual runoff of 475,000 million cubic meters.
- 500 km of Mekong River bisects Cambodia.
- Annually water flow of the Mekong River comes to Cambodia is about 410 billion m3 and out of it to Vietnam Delta about 500 billion m^3.
- The Mekong and its tributaries, combined with local rainfall, annually flood 17,100 sq km or 25% of the plain area.

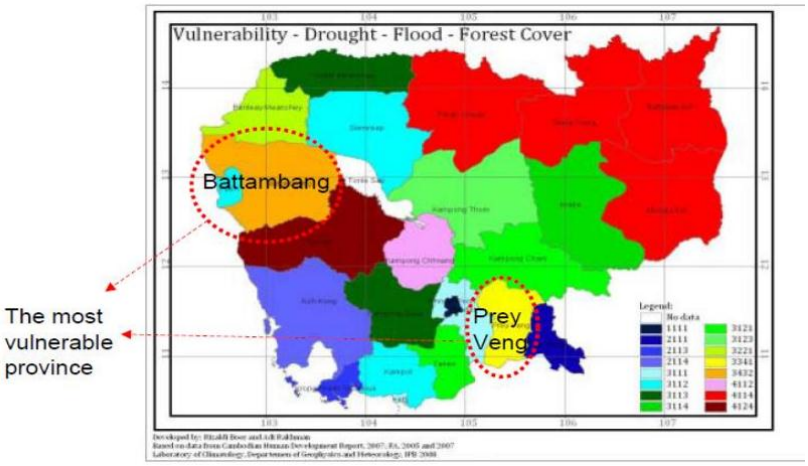
TONLE SAP Great Lake



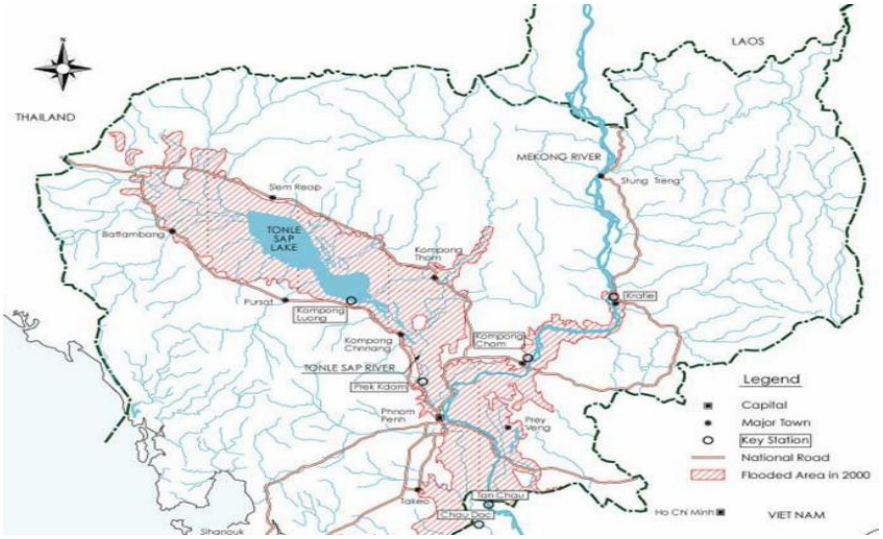
- The biggest water lake in the Southeast Asia
- Fed annually by the Mekong Reverse Flow (receive over 50% of its volume from the Mekong flood flow).
- Mean dynamic surface= 8200 km2
- Dry season= 2500 km2
- Wet season = 15000 km2
- Water flows into the lake during May/June

- Water flows back into Lower Mekong and Bassac in Sep/Oct.
- Water level fluctuates from 7-8 m

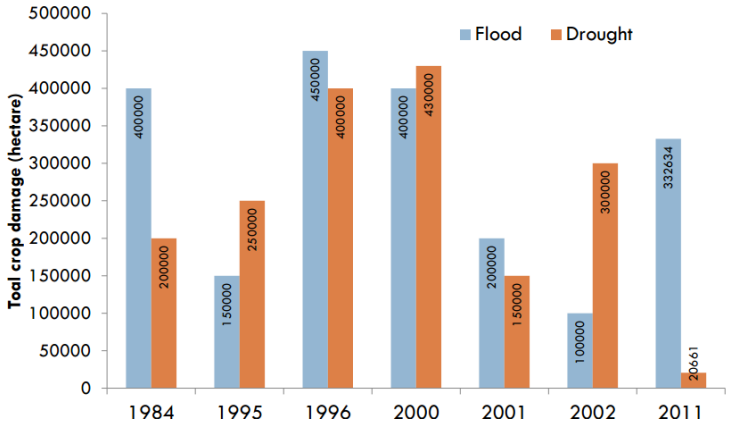
Climate-Vunerability Index for Agriculture



Flood Prone Areas in Cambodia

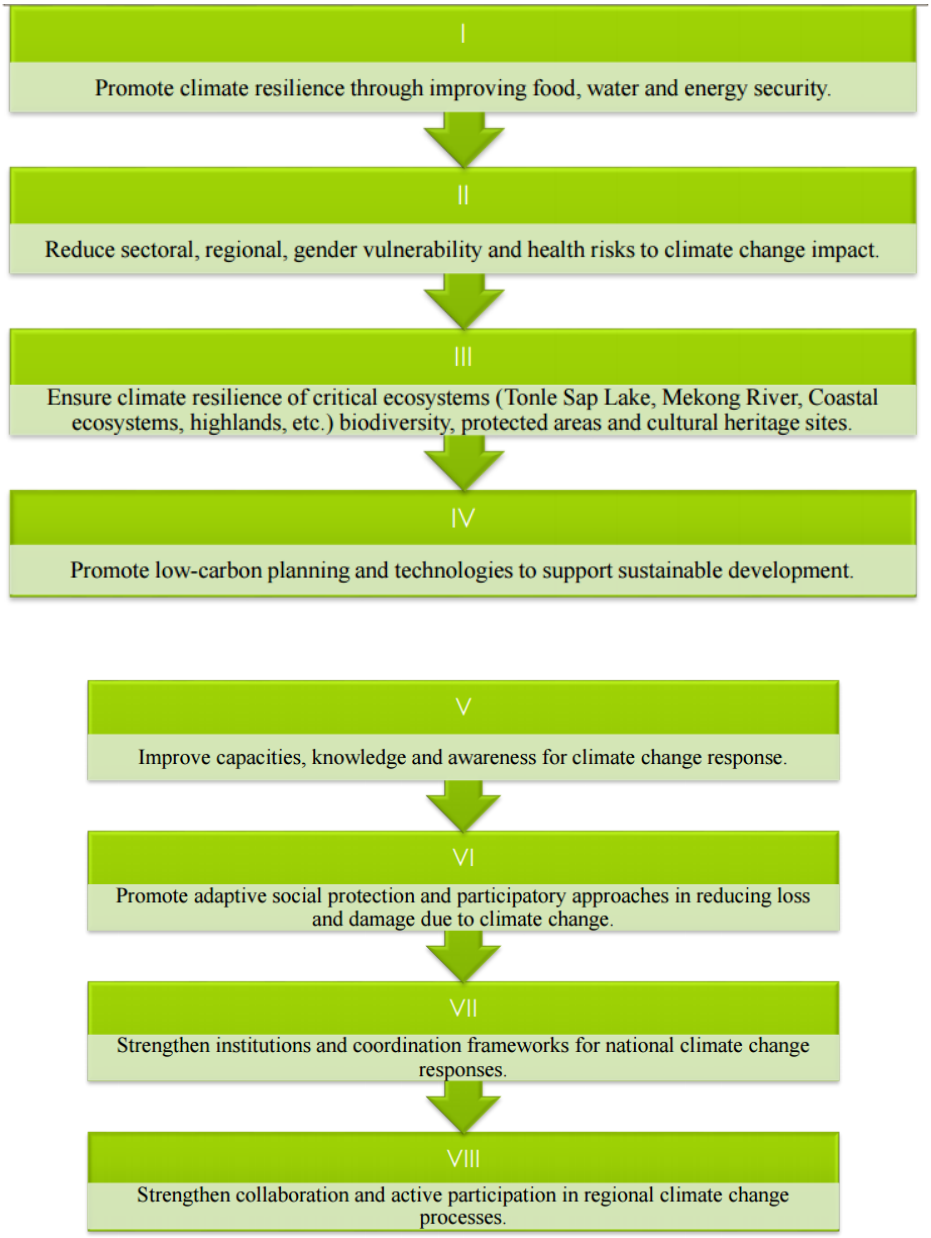


Effects of Flood And Drought on Agricultural Development

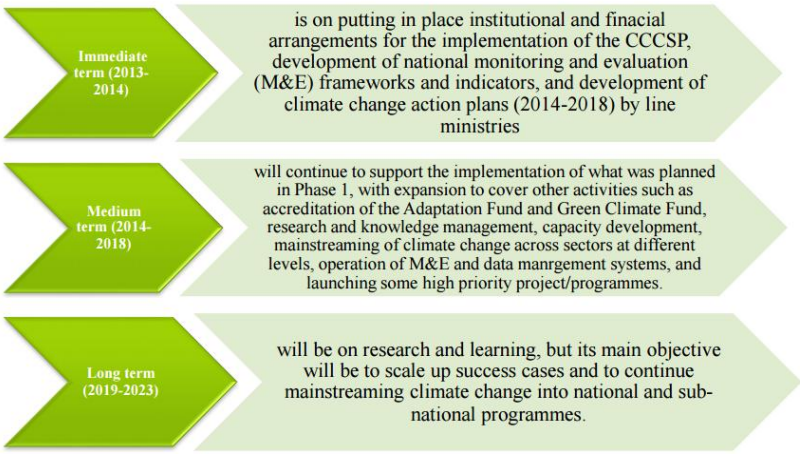


The result of modeling studies in the Initial National Communication (INC) and the Second National Communication (SNC) indicates that Cambodia's mean surface temperature has increased by 0.8 since 1960. The mean monthly temperature is projected to increase between 0.013 to 0.036 per year by 2099, depending on location. The rate of temperature increase is higher in low altitude areas than in high altitude areas. shows that the global sea level rise is projected to increase between 18cm and 50cm by 2100. As increase in the temperature is likely to affect agricultural productivity. According to the International Rice Research Institute, rice grain yields decline by 10% for each 1 0C increase in minimum (night) temperature during the growing period in the dry season. Cambodia's coastline of 435km would be affected by sea-level rise, while low-lying farming areas would be exposed to saline intrusion causing damage to crop.

8 Strategies for Reducing Vulnerability to Climate Change Impacts of People



3 Phases of Implementation



CLIMATE EXTREMES & DISASTER RISK REDUCTION

by **Joy Jacqueline Pereira, Norhisham bin Kamarudin,**

& Mohd Ariff bin Baharom

Climate Variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate at all spatial and temporal scales beyond that of individual weather events [IPCC-SREX, 2012].

Climate Change refers to change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer [IPCC-SREX, 2012]. Climate change may be due to natural variability or as a result of human activity.

Climate Change refers to "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." (Article 1, UNFCCC).

Climate Change refers to any change in climate over time that directly or indirectly affects humans and their activities as well as natural systems and its processes (National Policy on Climate Change, 2008).

Exposure refers to the presence of people; livelihoods; environmental services and resources; infrastructure; or economic, social, or cultural assets in places that could be adversely affected.

Vulnerability refers to the propensity or predisposition to be adversely affected.

Resilience refers to the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions.

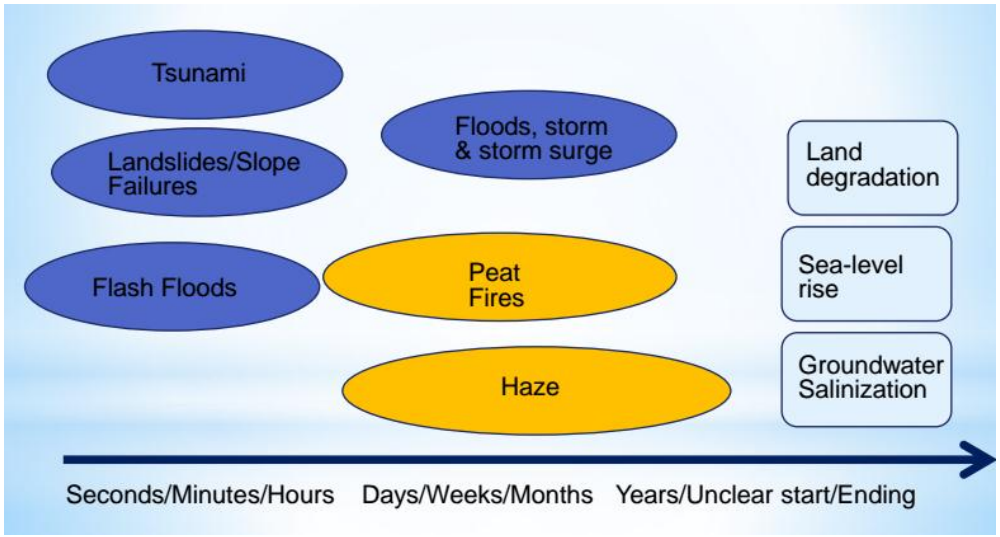
Susceptibility refers to the physical predisposition of human beings, infrastructure, and environment to be affected by a dangerous phenomenon due to lack of resistance and .....such systems once impacted will collapse or experience major harm and damage due to the influence of a hazard event.

Attribution of Extreme Events

There is evidence that some extremes have changed as a result of anthropogenic influences, including increases in atmospheric concentrations of greenhouse gases. It is likely that anthropogenic influences have led to warming of extreme daily minimum and maximum temperatures at the global scale. There is medium confidence that anthropogenic influences have contributed to intensification of extreme precipitation at the global scale. It is likely that there has been an anthropogenic influence on increasing extreme coastal high water due to an increase in mean sea level. The uncertainties in the historical tropical cyclone

records, the incomplete understanding of the physical mechanisms linking tropical cyclone metrics to climate change, and the degree of tropical cyclone variability provide only low confidence for the attribution of and detectable changes in tropical cyclone activity to anthropogenic influences. Attribution of single extreme events to anthropogenic climate change is challenging. [3.2.2, 3.3.1, 3.3.2, 3.4.4, 3.5.3, Table 3-1]

Fast & Slow Onset Events



24 Asia

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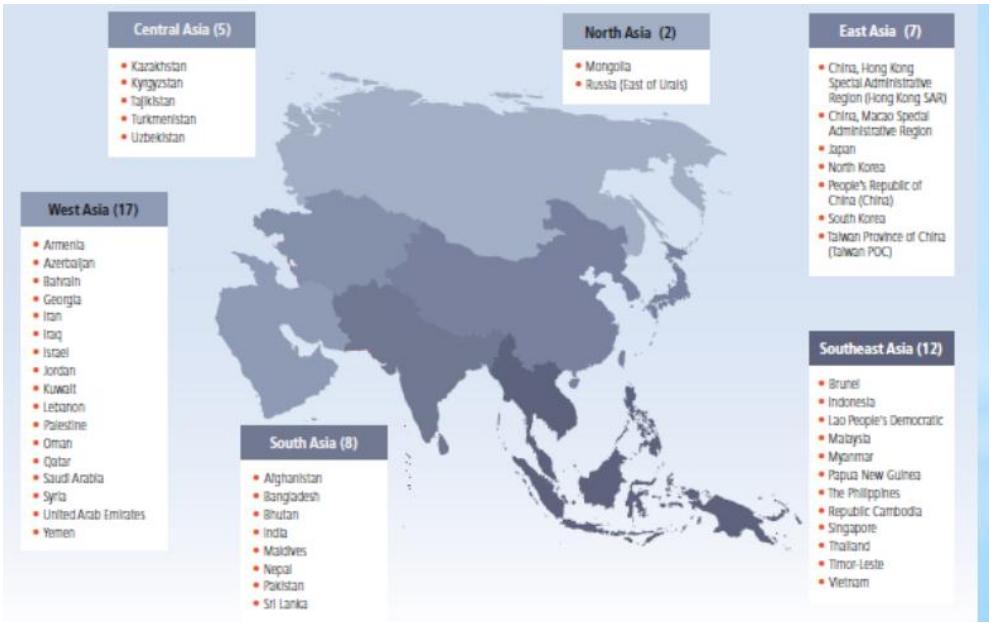
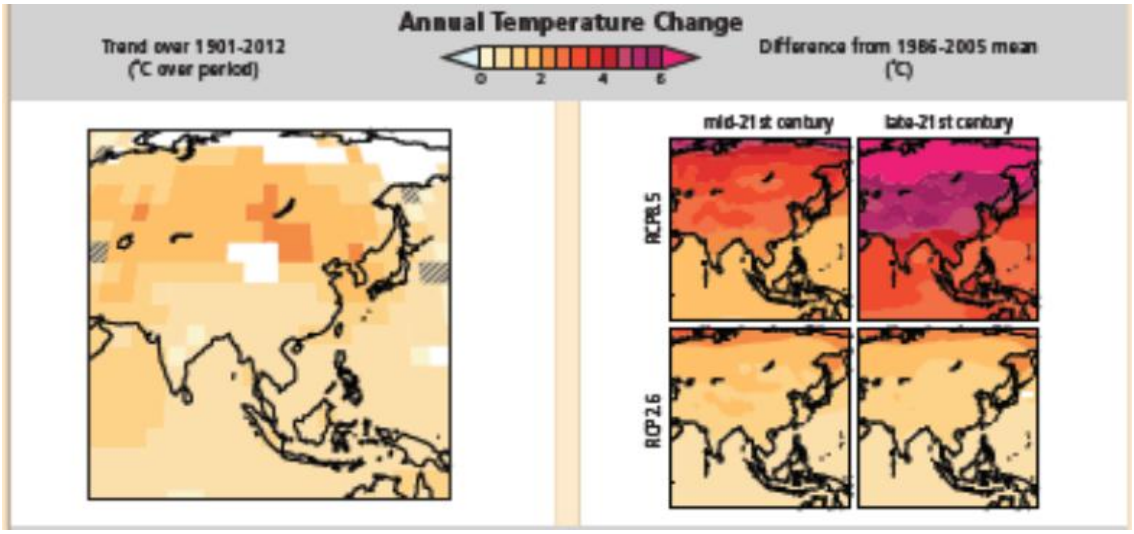
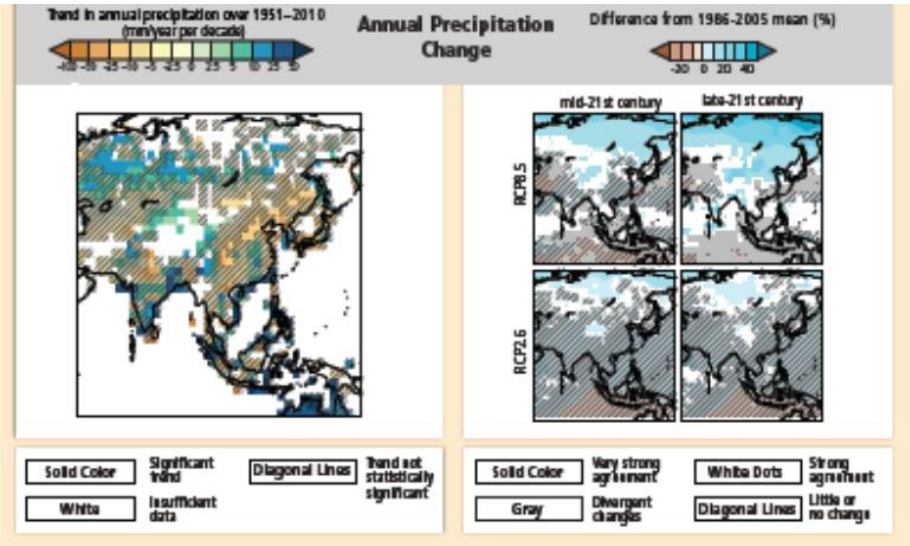
51 Countries/Regions



Observed & Projected Changes in Annual Average Temperature in Asia



Observed & Projected Changes in Annual Average Precipitation in Asia



Observations of Past Events

Climate Phenomenon	Asia	Southeast Asia
Heat Waves	It is likely that the frequency of heat waves has increased in large parts of Asia.	No Specific Observations
Drought	There is medium confidence that more megadroughts occurred in monsoon Asia and wetter conditions prevailed in arid Central Asia monsoon region during the Little Ice Age (1450-1850) compared to the Medieval Climate Anomaly (950-1250).	No Specific Observations
Floods	With high confidence, past floods larger than recorded since the 20th century occurred during the past five centuries in eastern Asia. There is medium confidence that in the Near East and India modern large floods are comparable or surpass historical floods in magnitude and/or frequency.	No Specific Observations

Future Projections

Climate Phenomenon	Asia	Southeast Asia
Precipitation	Future increase in precipitation extremes related to the monsoon is very likely in East Asia, South Asia and Southeast Asia.	Future increase in precipitation extremes related to the monsoon is very likely in Southeast Asia.
	Indian monsoon rainfall is projected to increase. For the East Asian summer monsoon, both monsoon circulation and rainfall are projected to increase.	There is low confidence in projections of future changes in the Madden-Julian Oscillation due to the poor skill in model simulations of this intraseasonal phenomenon and the sensitivity to ocean warming patterns. Future projections of regional climate extremes in Southeast Asia are therefore of low confidence.
		Reduced precipitation in Indonesia in Jul-Oct due to pattern of Indian Ocean warming (RCP 4.5 or higher end scenarios)
El Niño-Southern Oscillation	Natural modulations of the variance and spatial pattern of El Niño-Southern Oscillation are so large that confidence in any projected change for the 21st century remains low. Confidence is low in changes in climate impacts for most of Asia.	Low Confidence in any projected change for the 21st century.

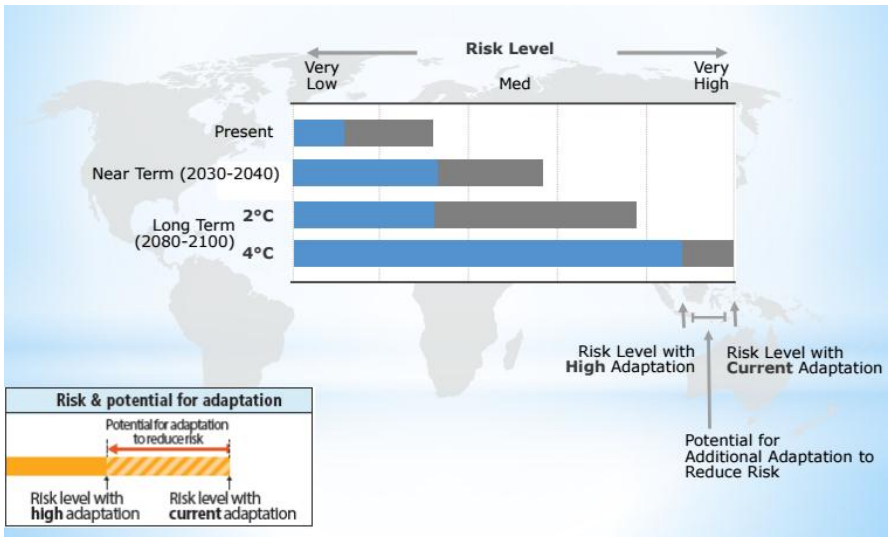
Sea Level Rise (IPCC 2013)

- Projected climate change (based on RCPs) in AR5 is similar to AR4 in both patterns and magnitude, after accounting for scenario differences.
    - Projections of global mean sea level rise has increased in confidence since the AR4 because of the improved physical understanding of the components of sea level, the

improved agreement of process-based models with observations, and the inclusion of ice-sheet dynamical changes.

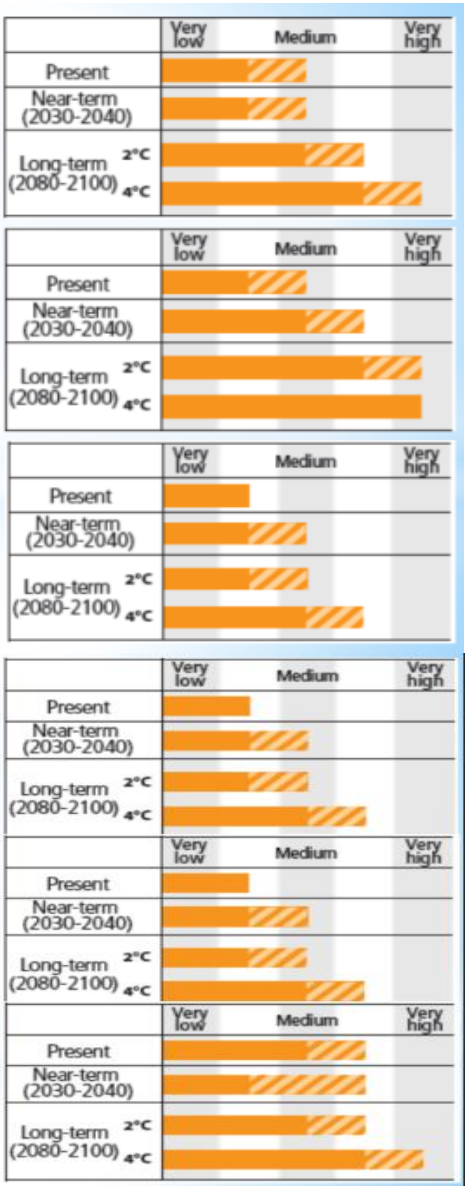
- Global mean sea level will continue to rise during the 21st century. Under all RCP scenarios the rate of sea level rise will very likely exceed that observed during 1971–2010 due to increased ocean warming and increased loss of mass from glaciers and ice sheets.
- Global mean sea level rise for 2081−2100 relative to 1986–2005 will likely be in the following ranges:
    - 0.26 to 0.55 m (RCP2.6)
    - 0.32 to 0.63 m (RCP4.5)
    - 0.33 to 0.63 m (RCP6.0)
    - 0.45 to 0.82 m (RCP8.5) – medium confidence
- Sea level rise will not be uniform. By the end of the 21st century, it is very likely that sea level will rise in more than about 95% of the ocean area.
- About 70% of the coastlines worldwide are projected to experience sea level change within 20% of the global mean sea level change.

Assessing Risk

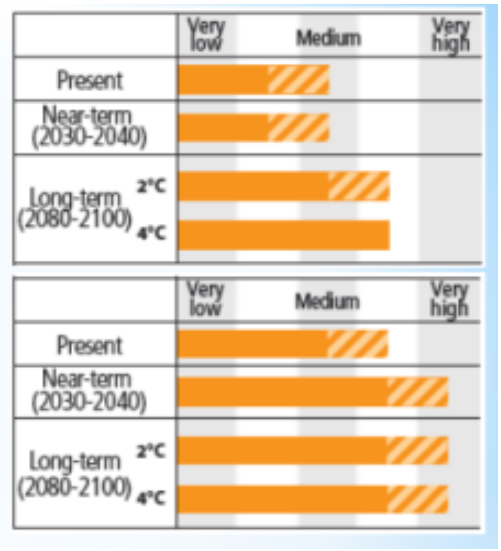


Key Risks in Asia

- Increased coastal, riverine and urban flooding leading to widespread damage to infrastructure and settlements in Asia (medium confidence)
- Increased risk of heat-related mortality (high confidence)
- Increased risk of drought-related water and food shortage causing malnutrition (high confidence)
- Increased risk of flood-related deaths, injuries, infectious diseases and mental disorders (medium confidence)
- Increased risk of water and vector-borne diseases (medium confidence)



- Exacerbated poverty, inequalities and new vulnerabilities (high confidence)
- Increased risk of crop failure and lower crop production could lead to food insecurity in Asia (medium confidence)
- Water shortage in arid areas of Asia (medium confidence)
- Coral reef decline in Asia (high confidence)
- Mountain-top extinctions in Asia (high confidence)



Key Conclusions: IPCC-WG2 Chapter 24, Asia

- Water scarcity is expected to be a major challenge for most of the region due to increased water demand and lack of good management (medium confidence)

- There is low confidence in future precipitation projections at a sub-regional scale and thus in future freshwater availability in most parts of Asia.

- Integrated water management strategies could help adapt to climate change, including developing water saving technologies, increasing water productivity, and water reuse.

Disaster Management Framework

- Experience the collapse of Highland Towers in 1993;
- NSC Directive No. 20 came into force in 11 May 1997;
- Reviewed on 30 Mac 2012;
- Needs to manage:
  - ➢ Total Disaster Risk Management (TDRM);
  - ➢ Increase in complexity;
  - ➢ Engage private, NGO and community;
  - ➢ Take into account AADMER & other international arrangements.

Aim of Directive No. 20

Outlines:

Policy and Mechanism on Disaster and Relief Management on Land

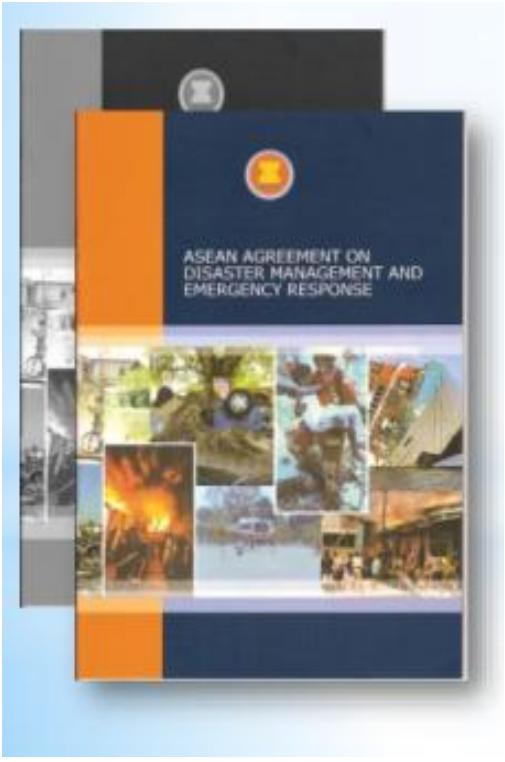
Based on:

Levels of Government Administration

By:

Establishing a holistic management mechanism at the stage determining roles & responsibilities of various Government voluntary bodies in disaster management in disaster of pre, during & post disaster; and Agencies, statutory bodies, the private sector and management.

Asean Agreement on Disaster Management & Disaster Response (AADMER)



- ASEAN Agreement on Disaster Management and Emergency Response
- Signed in July 2005, ratified by all ten (10) ASEAN Member Countries, entered into force on 24 December 2009
- Objective: Reduce disaster losses in ASEAN region and jointly respond to disaster emergencies
- A legal framework for all ASEAN Member States and serves as a common platform in responding to disasters within ASEAN

- ASEAN Coordinating Centre for Humanitarian

  Assistance on disaster management (AHA Centre)as the operational coordination body and engine of AADMER

Financial Aspects

- Central and State Governments through their respective agencies are responsible to allocate funds for the purpose of Disaster management and Disaster Risk Reduction;
- Donation drives for a specific disaster may channel financial contribution to the National Disaster Relief Trust Fund (NDRTF).
- RMK-11 – special allocation for DRR adminsitered by the National Security Council

National Platform & Action Plan for Disaster Risk Reduction (MYDRR)

- The National Security Council (MKN) of the Prime Minister's Department is entrusted with the responsibility of ensuring the effectiveness of the disaster management mechanisms in the country as mandated by MKN Directive 20.
- MKN is formalising existing arrangements for DRR and expanding the array of stakeholders through establishment of the National Platform on DRR, which was announced in 2013.
- The National Action Plan for DRR (MyDRR) is now undergoing stakeholder consultation. Formal workshops have been held with government agencies, non-government organisations and the private sector.

Goal

Towards Sustainable Development and Resilient Communities though Disaster Risk Reduction

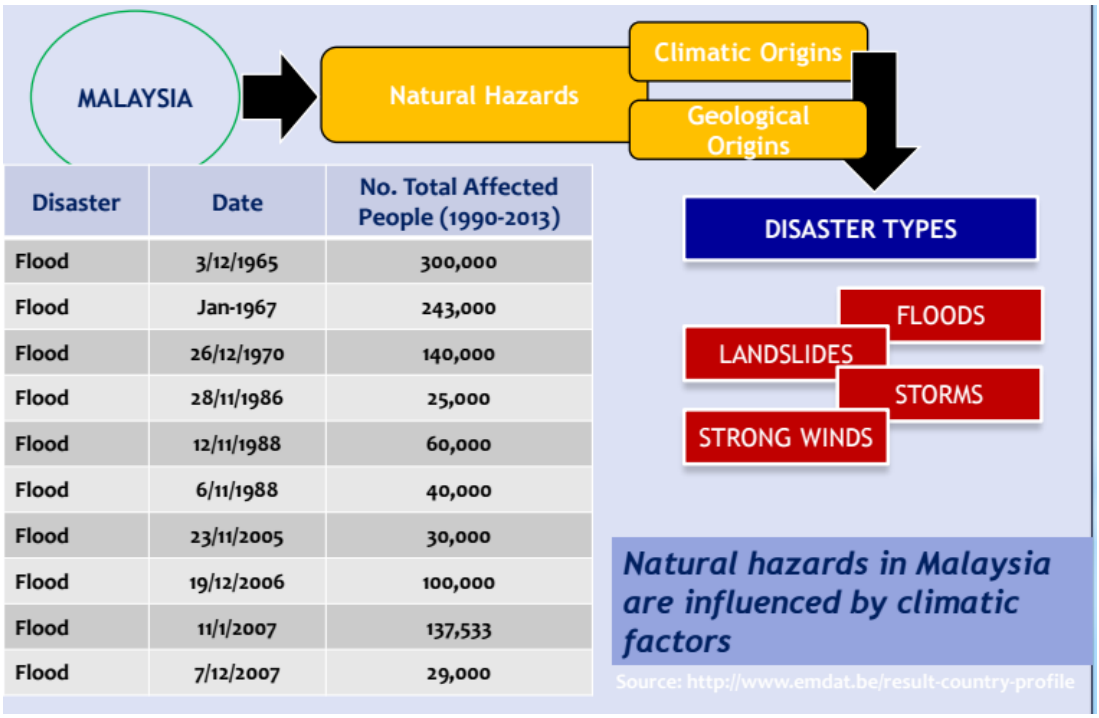
Objectives

- Mainstreaming DRR in national development;
- Enhancing capacity for holistic and effective disaster management at all levels;
- Strengthening monitoring systems, early warning and information dissemination on disasters; and
- Developing a culture of resilience to current and emerging hazards and disasters at the community level.

MyDRR – KEY ACTION AREAS

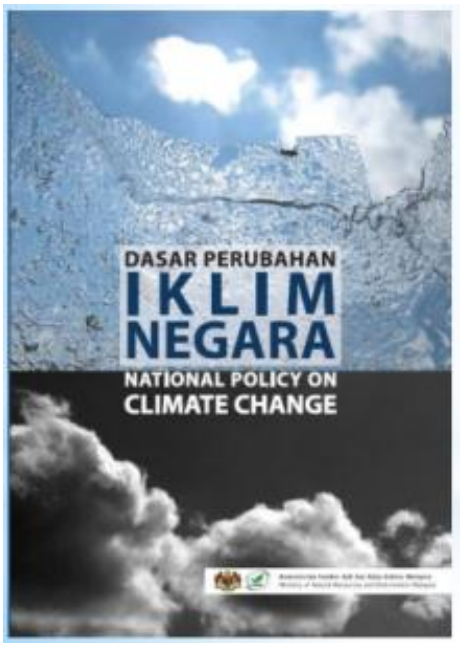
- Formulation and implementation of laws related to disaster management;
- Integration of risk reduction measures in the development agenda at all levels;
- Assessment of hazards and risks
- Infrastructure for disaster mitigation and early warning systems;
- Disaster preparedness at all levels;
- Disaster response mechanisms;
- Disaster Recovery and Reconstruction

Natural Hazards In Malaysia



Disaster	Date	No. Total Affected People (1990-2013)
Flood	3/12/1965	300,000
Flood	Jan-1967	243,000
Flood	26/12/1970	140,000
Flood	28/11/1986	25,000
Flood	12/11/1988	60,000
Flood	6/11/1988	40,000
Flood	23/11/2005	30,000
Flood	19/12/2006	100,000
Flood	11/1/2007	137,533
Flood	7/12/2007	29,000

National Policy on Climate Change (2009)



- **Climate-resilient development** – development that takes into account measures to address climate change and extreme weather in line with national priorities.
- Broadened definition enables the National Policy on Climate Change to serve as an instrument to harmonise and integrate to the extent possible and in line with national priorities, measures on climate change adaptation, mitigation and disaster risk reduction.

- 5 Principles, 10 Strategic Thrusts & 43 Key Actions.

Key Actions Related to DRR in the National Policy on Climate Change (2009)

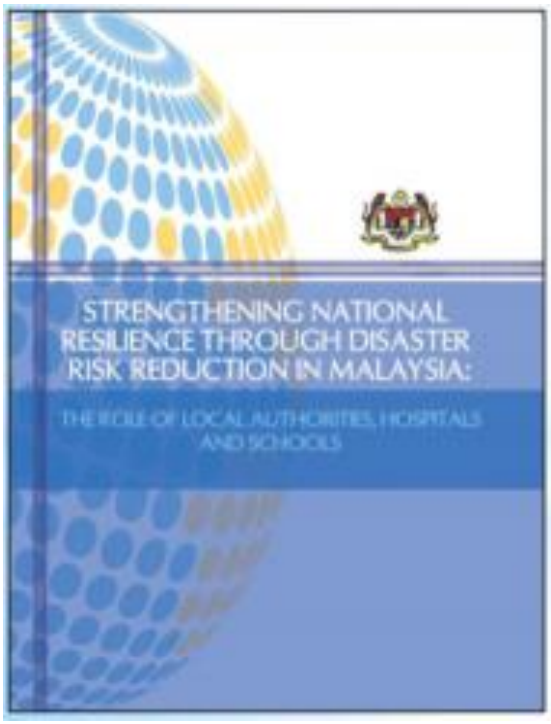
RATIONALE: Climate change and extreme weather have intensified the occurrence of natural disasters, amongst others sea-level rise, floods, landslides, coastal and land erosion, drought, forest fires and haze, which have impacted human safety and health, threatened the fabric of the nation's economy and caused changes to natural and built landscapes.

- Conduct systematic reviews and harmonise existing legislation, policies and plans, taking into account and proposing relevant balanced adaptation and mitigation measures to address DRR [KA1 - ST1]
- Incorporate measures, including mobilising financing and technical assistance for DRR [KA13 - ST4]
- Integrate measures into policies, plans, programmes and projects in DRR [KA25 - ST6]
- Establish and implement a national R&D agenda on climate change taking into account vulnerability due to extreme weather events and natural disasters [KA28 - ST7]
- Strengthen national data repository through periodic national inventory by establishing a database/inventory on natural disasters and extreme weather events [KA29 - ST7]

DRR & CCA Linkage

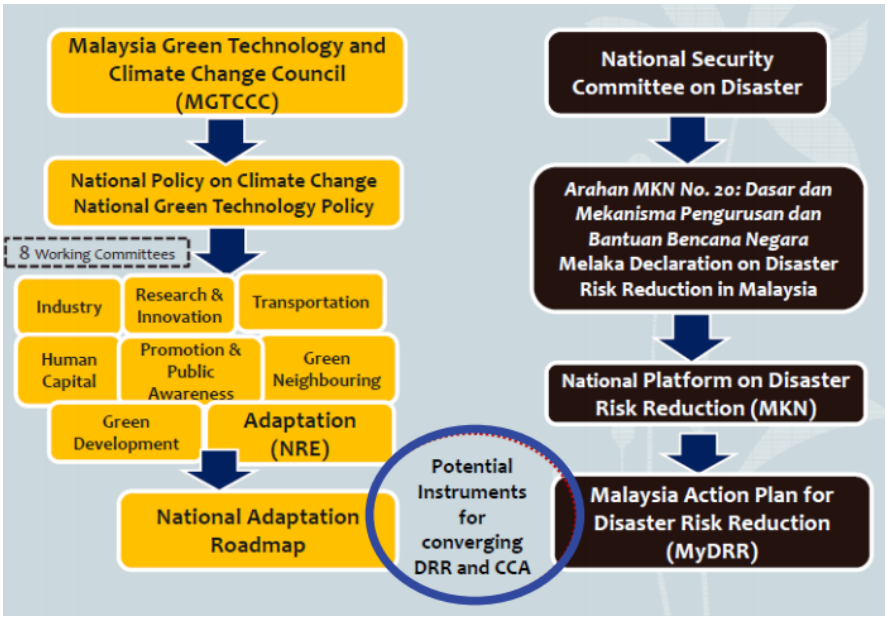
Melaka Declaration on Disaster Risk Reduction in Malaysia 2011

Melaka, 18–19 February 2011

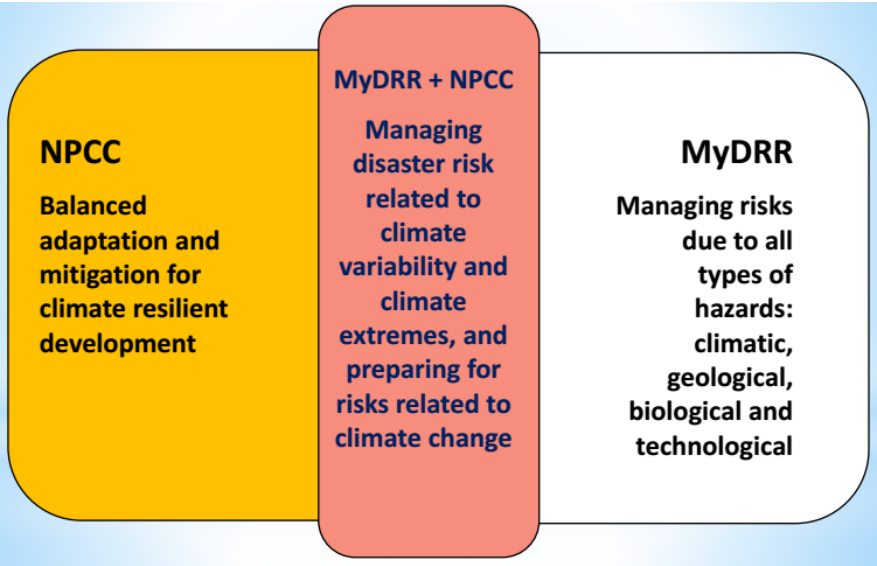


- Recognising the changing nature of disaster risk in the country due to climate variability and change
- To promote the use of technology in support of early warning, multi-hazards risk assessment, and climate modelling and downscaling.
- To strengthen local capacity to integrate climate and disaster risk into local development planning

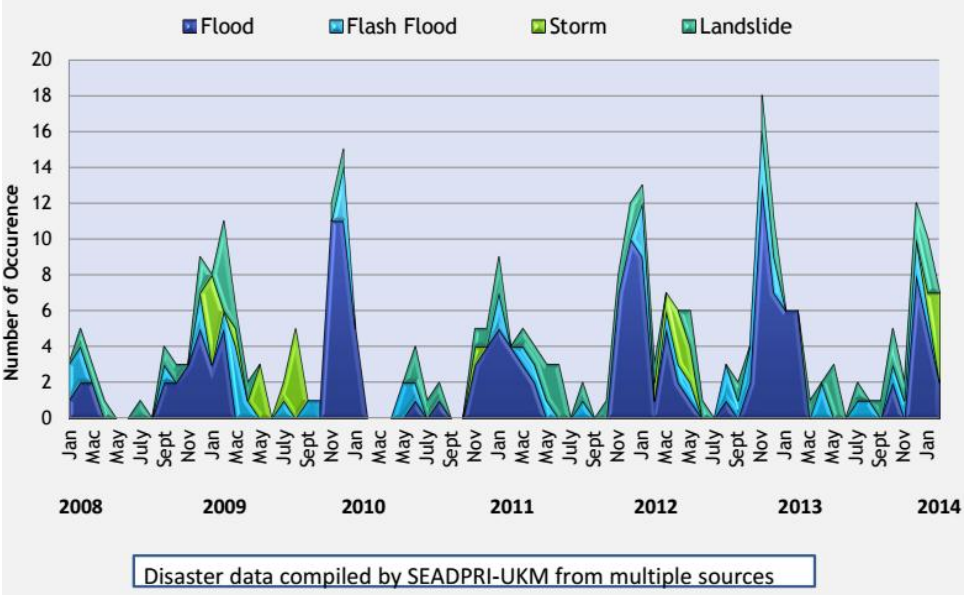
Institutional Agreement



MyDRR & NPCC: Converging Aspirations



Frequency of Disasters in Malaysia



Flood Prone Areas in Malaysia

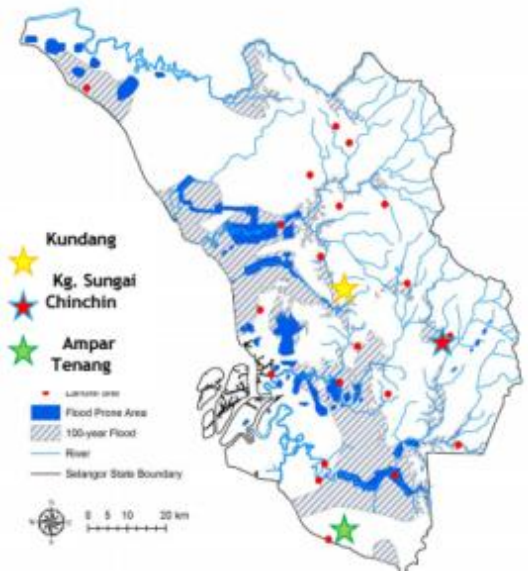
Cascading Risks

Landfill Sites Exposed to Flooding:

•Number of sites located within flood prone area: 4

•Number of sites located within 100-year flood: 9

•Number of sites potentially exposed to impacts from sea level rise: 3



Flood prone area and 100-year flood map with identified active and closed landfill sites in Selangor. (Sources: Flood map adapted from RFN-2 Report 2009, landfill sites from NAHRIM and NRE 2010) Source: Nurul, Lim and Pereira 2013

Floodpain – Issues

Flood-prone areas (UN Guideline for Reducing Flood Losses, 1998):

(i) Floodway – no structures

(ii) Floodplain – generally defined as the extent of the 100-year event; requires flood protection and flood proofing, [JPS-Urban Stormwater Management Manual]

(iii) Areas beyond floodplain – generally defined as the extent of the 500-year event; may be subject to flooding, need to ensure flood proofing of "critical facilities" (hazardous material facilities, water & waste facilities, hospitals, schools, airports, emergency services, fire stations, major computer centres)

Weakness:

(i) Prediction based on historical records

(ii) Changes in land use affects analysis

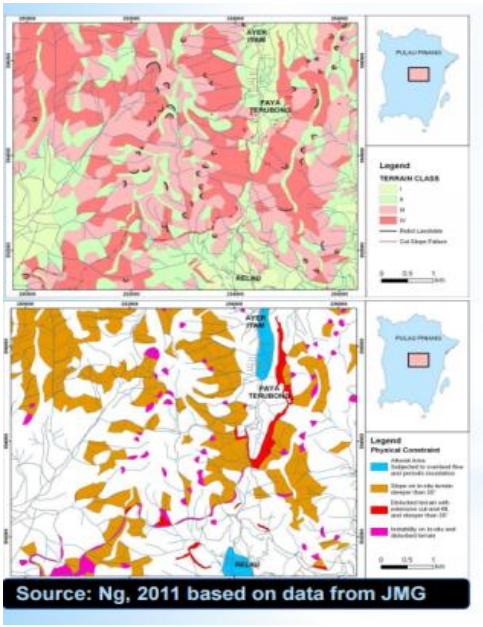
(iii) Changes in climate and extreme events affects analysis

(iv) Changes in sea-levels affects analysis in coastal areas

Areas Susceptible to Landslides/Floods

Risk Factors:

- Uninformed planning
- Development in unsuitable terrain
- Cleared areas/blocked drainage



Source: Ng, 2011 based on data from JMG

Adaptation Measures:

- Informed planning
- Regular slope & drainage inspection and maintenance
- Early warning systems
- Local community engagement
- Risk Pooling, etc.

	Type of Flood	Cause of flood	Affected area
1.	Flash flood	Heavy rainfall event, dam or levee failure	Destroy structures, down trees and wash out roads
2.	River flood	Overflow the river banks, heavy rainfall, snowmelt and ice jams	Extensive damage to residents living near rivers and streams
3.	Coastal flood	Hurricanes, tropical storms, tsunamis, extremely high tides and strong onshore winds.	Extensive damage to industry, agricultural, residents living near coastal area.
4.	Urban flood	Flash flooding, river flooding and coastal flooding	High economic damages to businesses and homes
5.	Areal floods	Heavy rainfall and dangerous inundation of low lying areas	Agricultural losses and breeding ground for insects and disease.

Flood Event (Year)	Place	Damage (USD million at 1996 prices)	Deaths	No. of Victims Evacuated
1991	Other Peninsular Malaysia	NA	11	NA
1992	Peninsular Malaysia	NA	12	NA
1993	Peninsular	NA	22	17,000
1993	Sabah State	72.57	5	5,000
1995	Shah Alam/Kelang Valley	1.76	1	8,970
1995	Klang Selangor	NA	3	0
1995	Other Peninsular Malaysia	NA	4	14,900
June, 1996	Sahab	>100 houses destroyed	1	9,000
29.8.1996	Pos Dipang, Perak	97.8	44	Hundreds
December, 1996	Sabah	NA	241	23,000
30.12.1998	Kuala Lumpur	NA	5	0
5-9.1.1999	Penampang, Sabah	NA	6	4,481
11.1.1999	Sandakan Sabah	NA	3	0
23.11.2000	Kg. La	NA	6	0
Dec. 2001	Kelantan, Pahang, Terengganu	Crop loss & property damage in millions USD; USD 0.65 million texts destroyed	6	>10,000
27.12.2001	Gunung Pulai, Johor	Mudslide swept away 4 houses 5	4	families
31.12.2001	Benut Marang, Terengganu	Crop loss & property damage	4	Thousands
Dec 2006 - Jan 2007	Johor State Kelantan State	USD 489 million Property Damage USD 17.28 Damage to Infrastructures	18	110,000
2008	Johor State	65 (Relief Costs)	28	34,000
November 2010	Kedah & Perlis States	Alor Setar Airport closed, railway line flooded, USD 8.48 million padi crop damage	4	50,000

Last 20 years damage and losses by flood events in Malaysia

Sources: Drainage and Irrigation Department Malaysia, Malaysian National Security Council and Chan, 2012.

Date	Place	Damage and Losses
December, 2011	Sungai Jelok, Kajang	RM2.4 million in damages with 61 businesses recording losses of between RM1,000 and RM250,000 each.

Date	Place	Damage and Losses
September, 2012	Serdang and Kajang	• About 100 vehicles were left stranded and 350 houses were in a metre of floodwaters. • 600 students and teachers from two schools were trapped.

The Impact of Flooding

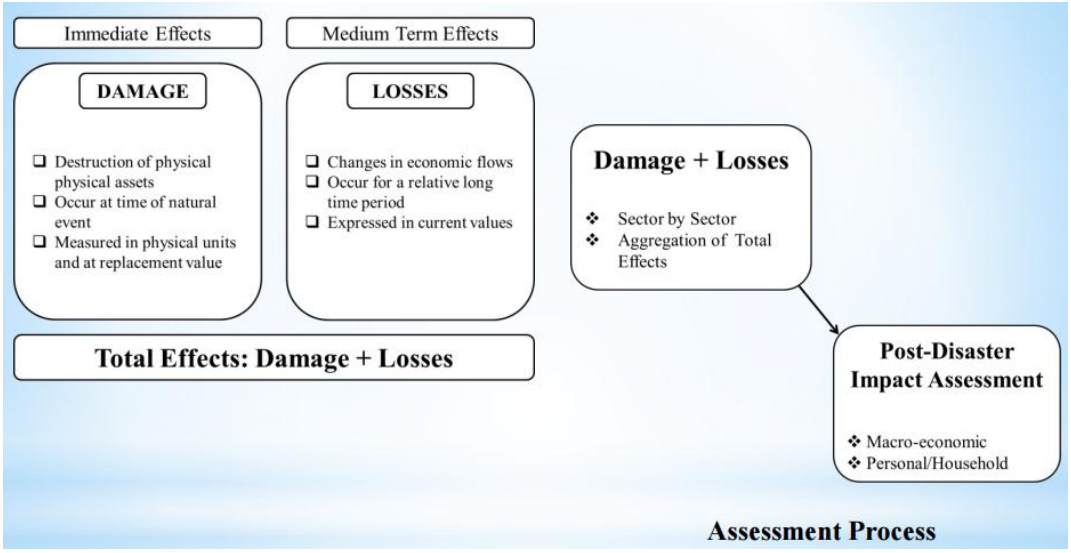
- Communication: Floodwater can seriously disrupt public and personal transport by cutting off roads and railway lines, as well as communication links when telephone lines are damaged.
- Health: Floods disrupt normal drainage systems in cities, and sewage spills are common, which represents a serious health hazard, along with standing water and wet materials in

the home. Bacteria, mould and viruses, cause disease, trigger allergic reactions, and continue to damage materials long after a flood.

- Agricultural: Floods can distribute large amounts of water and suspended sediment over vast areas, restocking valuable soil nutrients to agricultural lands. In contrast, soil can be eroded by large amounts of fast flowing water, ruining crops, destroying agricultural land/buildings and drowning farm animals.
- Personal property: Severe floods not only ruin homes / businesses and destroy personal property, but the water left behind causes further damage to property and contents.
- Environment: The environment and wildlife is also at risk when damage when damage to businesses causes the accidental release of toxic materials like paints, pesticides, gasoline etc.

No.	Method	Country	Disaster type	Reference
1.	Victorian rapid appraisal method (RAM) and the natural hazard loss estimation methodology (HAZUS)	Australia	Any type of disaster	Emergency Management Australia, 2002
2.	Costing Model (CM) and Event Impact Rapid Assessment and Disaster Scaling (EIRADS) calculator	Philippines	Any type of disaster	Raza, T. & Peralta, J.F. 2013,
3.	Calculation of direct and indirect losses	United States of America	Drought, Hurricane, floods and earthquake	National Academy Press, Washington, D.C. 1999
4.	The Economic Commission for Latin America and the Caribbean (ECLAC) Methodology	Jamaica	FLOOD RAINS AND LANDSLIDES	Economic Commission for Latin America and The Caribbean. 7 December 2001.
5.	The index of damaged area (IDA), direct damage assessment, indirect damage assessment and intangible damage assessment.	Italy	Landslide	Petrucci, O., 2013.
6.	Damage and Loss Assessment Methodology (DaLA)	Bangladesh	Cyclone	GFDRR, 2008
7.	Damage and Loss Assessment Methodology (DaLA)	Indonesia, Venezuela and Yemen	Tsunami and Flood	GFDRR and World Bank, 2007

Definition of Disaster Effects



Damage and Loss Assessment (DaLA)

Step 1: Define a pre-disaster baseline

Step 2: Develop a post-disaster situation

Step 3: Estimate damage and losses on a sector-by-sector fashion

Step 4: Estimate overall amount of disaster effects

Step 5: Estimate macro-economic impact

Step 6: Estimate impact on personal/household employment/income

Sectors	Sub-sectors
Infrastructure	• Water Supply and Sanitation • Transport • Energy • Telecommunication
Production	• Industry • Agriculture, Livestock and Fishery • Trade • Tourism
Social	• Education • Housing • Health • Cultural heritage
Cross-Cutting	• Environment • Gender

Challenges in L+D Assessment

- Recognition of cascading hazards and slow onset hazards - persistent, insidious and long-term;
- Detection and attribution related to extreme events;
- Identification of susceptible areas and spatial distribution of exposed and vulnerable communities therein;
- Data for assessment of loss and damage;
- Early warning and response systems
- New models for risk sharing / social protection schemes
- Legal implications and future security challenges

Concluding Remarks

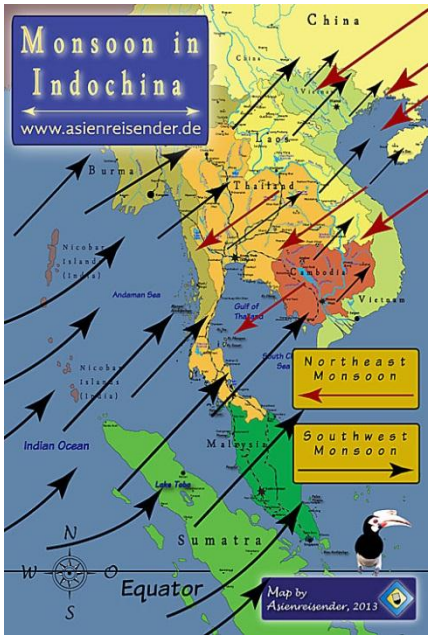
- DRR is central to adapt to climate extremes
- MKN has the mandate and the experience to address current and emerging risks due to climate extremes
- DRR and CCA are closely linked and need to be addressed together to ensure sustainable development
- Investing in enhanced capacity for disaster risk reduction, disaster preparedness and building resilience at all levels is a “no regret option” for climate change adaptation.

VIETNAM- DEALING WITH NATURAL DISASTERS

by **Dr. Pham Thi Hoa & Dr.Pham Ngoc**

Vietnam's Topography and Climate

- Vietnam deeply suffers from Asia monsoon regime, mainly as northeast and southeast monsoon
- Vietnam suffers directly from 6-10 storms and tropical depressions which causing heavy rain and flood after that.



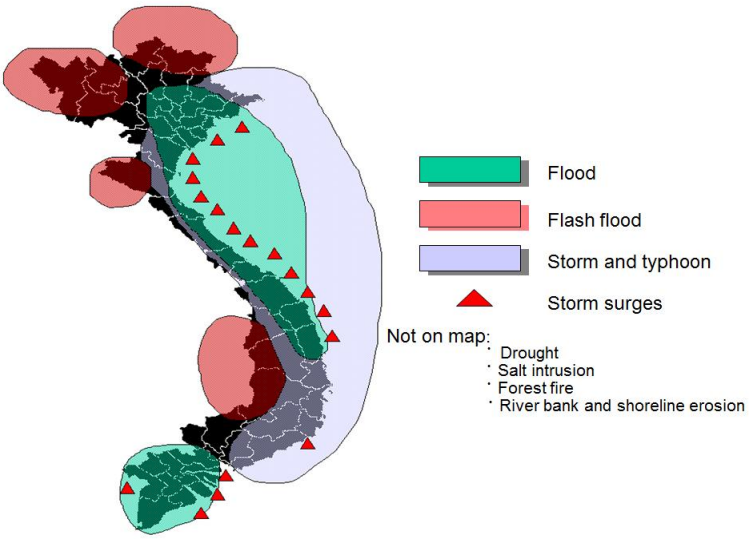
Viet Nam's location – in one of the most typhoon prone areas of the world – makes it vulnerable to a range of hydro-meteorological hazards, which hinder its sustained efforts to reduce poverty. Given the coincidence of typhoon and monsoon seasons with heavy rains and the complicated topography of narrow and low plains to steep and high mountains, annually monsoon rains, typhoons, floods, flash floods and drought cause death, injury, crop and property loss and infrastructure damage.

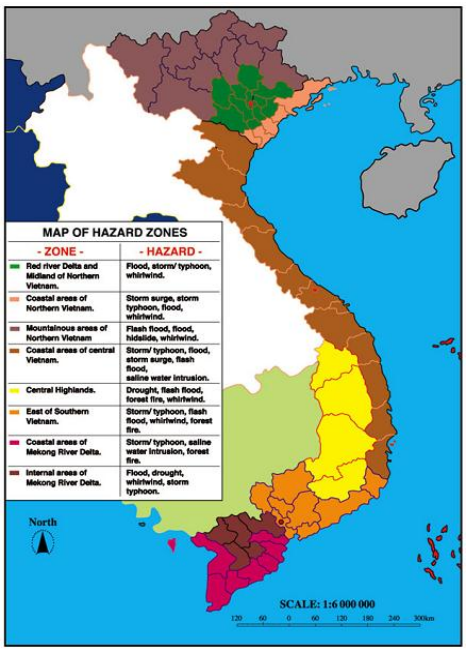
Most of the country's 2,360 rivers are short and steep, so that heavy rainfall in their basins produces intense, short duration floods. Sizeable portions of the country - particularly the Central Highlands and Central Coast - are subject to heavy rainfall. Flash floods commonly occur in over half of the country's 63 provinces - characterized by steep slopes, heavy rains and poor drainage conditions - or due to the failures of small reservoirs or landslides blocking upstream flows.

Table 1. Disaster relative frequency in Vietnam can be classified as follows:

High	Medium	Low
Flood, Inundation	Hail rain	Earthquake
Typhoon, tropical depression	Landslide	Accident (technology)
Flash flood	Forest fire	Frost
Tornado	Salt water intrusion	
Drought		

Typical Natural Disaster In Vietnam





MAP OF HAZARD ZONES

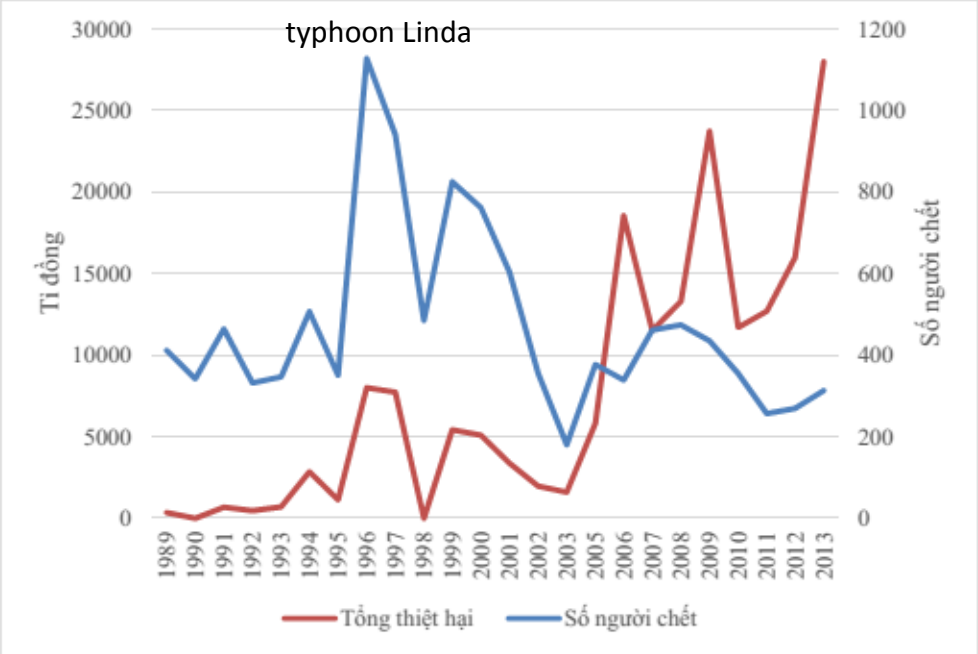
- ZONE -	- HAZARD -
Red river Delta and Midland of Northern Vietnam.	Flood, storm/ typhoon, whirlwind.
Coastal areas of Northern Vietnam.	Storm surge, storm typhoon, flood, whirlwind.
Mountainous areas of Northern Vietnam	Flash flood, flood, hidslide, whirlwind.
Coastal areas of central Vietnam.	Storm/ typhoon, flood, storm surge, flash flood, saline water intrusion.
Central Highlands.	Drought, flash flood, forest fire, whirlwind.
East of Southern Vietnam.	Storm/ typhoon, flash flood, whirlwind, forest fire.
Coastal areas of Mekong River Delta.	Storm/ typhoon, saline water intrusion, forest fire.
Internal areas of Mekong River Delta.	Flood, drought, whirlwind, storm typhoon.

Table 2. Assessment of Disaster Severity in Different Geographic Areas and in the Coastal Economic Zone of Vietnam

Disaster	Geographic Areas and Economic Zones							
	North east and north west	Red River Delta	North central coast	South central coast	Central highlands	North east south	Mekong River Delta	Coastal Economic Zone
Storm	+++	++++	++++	++++	++	+++	+++	++++
Flood	-	++++	++++	+++	+++	+++	+++++	++++
Flashflood	+++	-	+++	+++	+++	+++	+	+++
Whirlwind	++	++	++	++	+	++	++	++
Drought	+++	+	++	+++	++	+++	+	+++
Desertification	-	-	+	++	++	++	+	++
Saline intrusion	-	+	++	++	+	++	+++	++
Inundation	-	+++	++	++	-	++	+++	+++
Landslide	++	++	++	++	+	++	+++	++
Storm surge	-	++	++	++	++	++	+++	++
Fire	++	+	++	+++	-	+++	+++	+++
Industrial and environmental hazard	-	++	++	++	+++	+++	++	+++

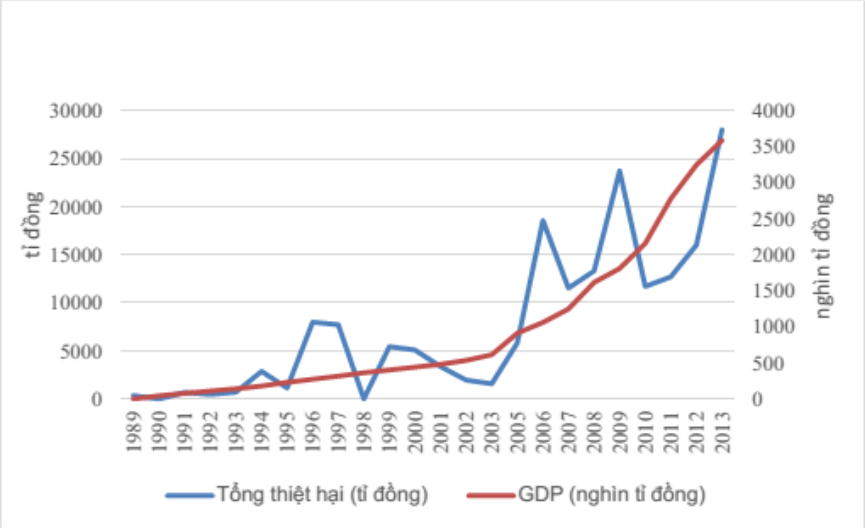
Number of Death and Damages Due to NDs in VN

Hình 4-9. Số người chết và tổng thiệt hại do thiên tai từng năm ở Việt Nam



Total Economic Loss and GPD of VN 1989-2013

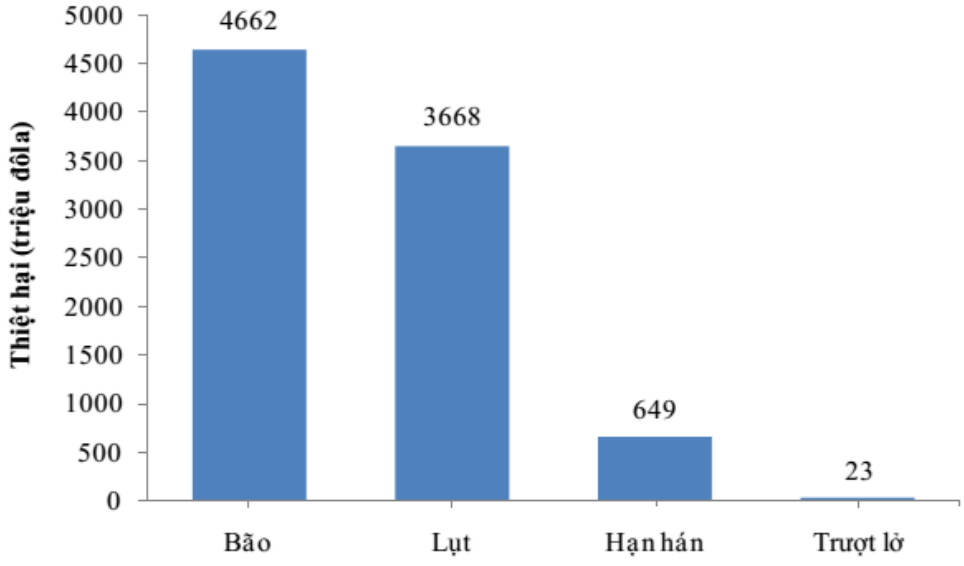
Hình 4-10. Tổng thiệt hại về kinh tế do thiên tai và GDP hàng năm của Việt Nam giai đoạn 1989-2013



(Nguồn: Tổng cục thống kê, 2013)

Economic loss due to NDs in VN (1990-2012)

Hình 4-6.Thiệt hại kinh tế (triệu USD) (1990-2012) do các thiên tai tại Việt Nam



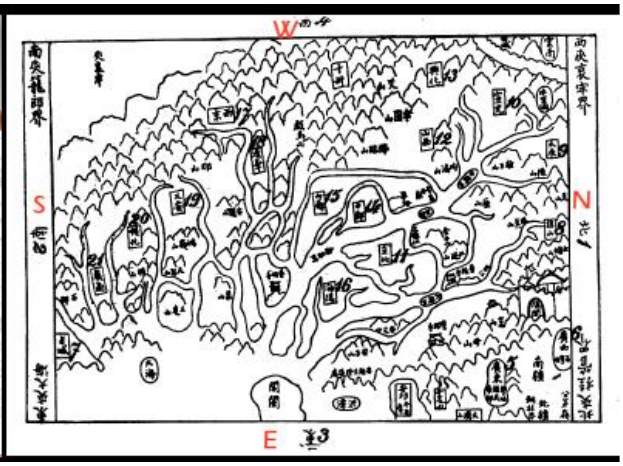
(Nguồn: EM-DAT: The OFDA/CRED International Disaster Database - www.emdat.be - Université catholique de Louvain - Brussels - Belgium)

Damages caused by Natural Disaster in VN

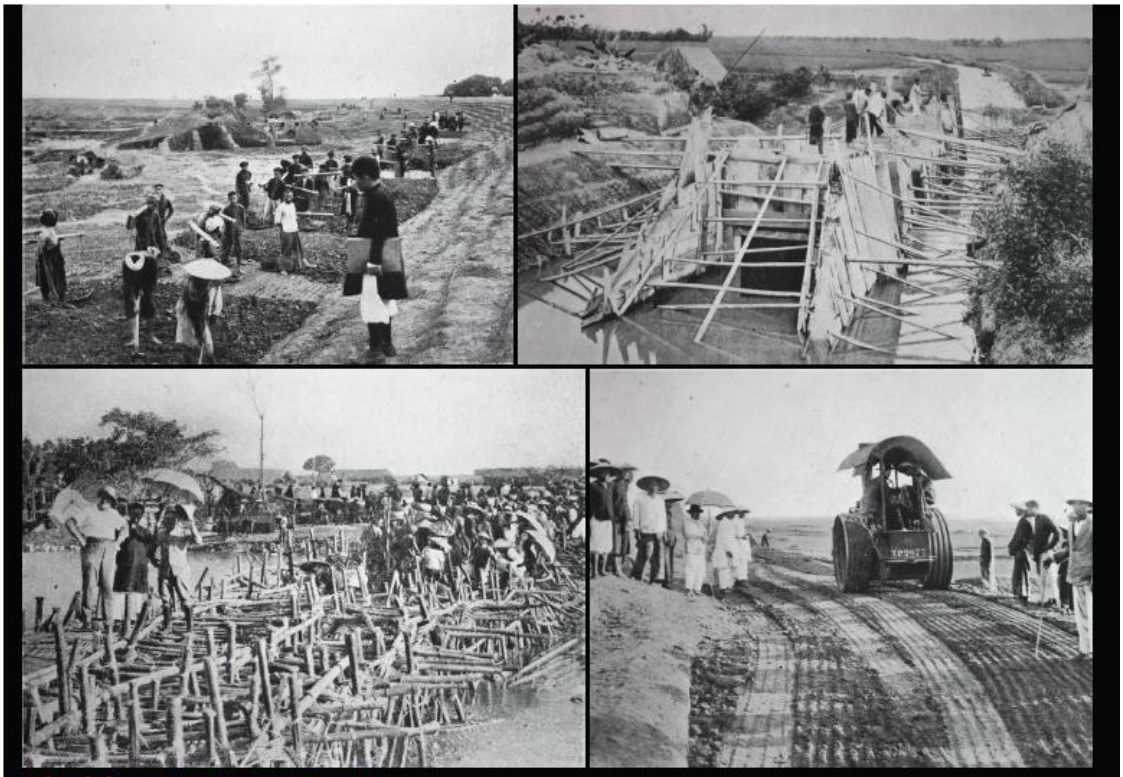
Item	Unit	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total
People killed	No	508	399	1.243	3.083	434	901	775	629	389	186	**7.537**
Houses collapsed	No	7.302	11.043	96.927	111.037	12.171	52.585	12.253	10.503	9.802	4.487	**395.202**
Rice fields submerged	Ha	658.676	198.439	927.506	641.393	103.422	131.267	655.403	132.755	46.490	209.764	**4.692.313**
Shrimp, fish poll broken	ha	6.364	120	4.761	34.619	215	1.419	2.877	1.002	310	10.581	**65.955**

Dealing with Natural Disasters

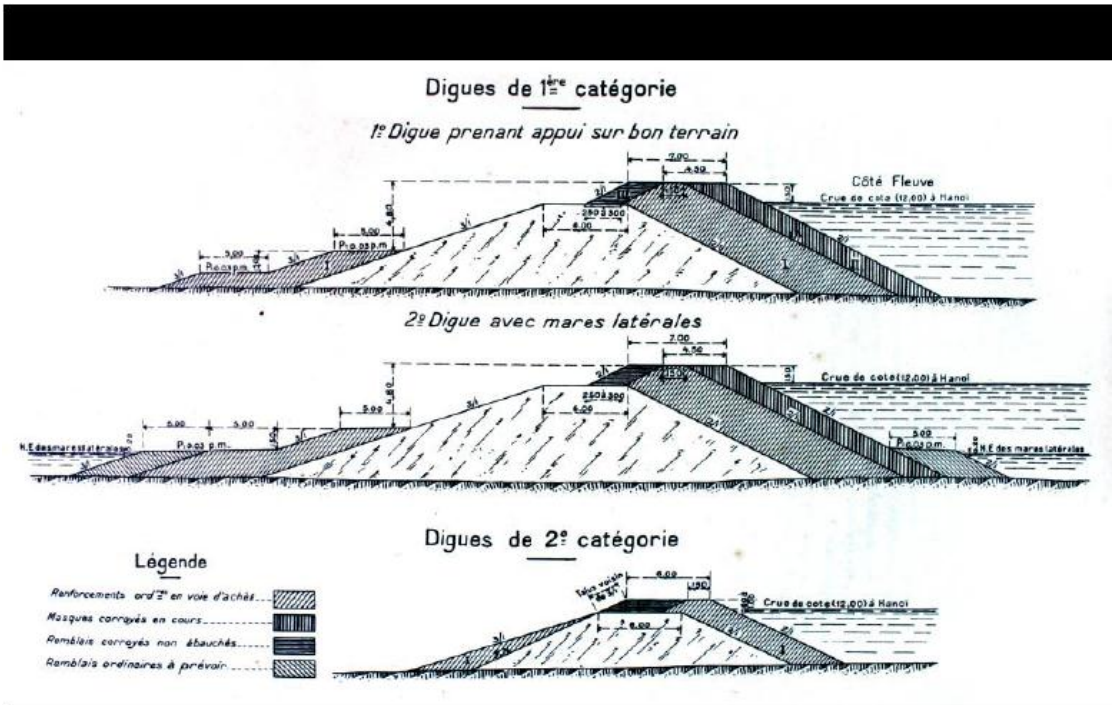
Son Tinh – Thuy Tinh Legend



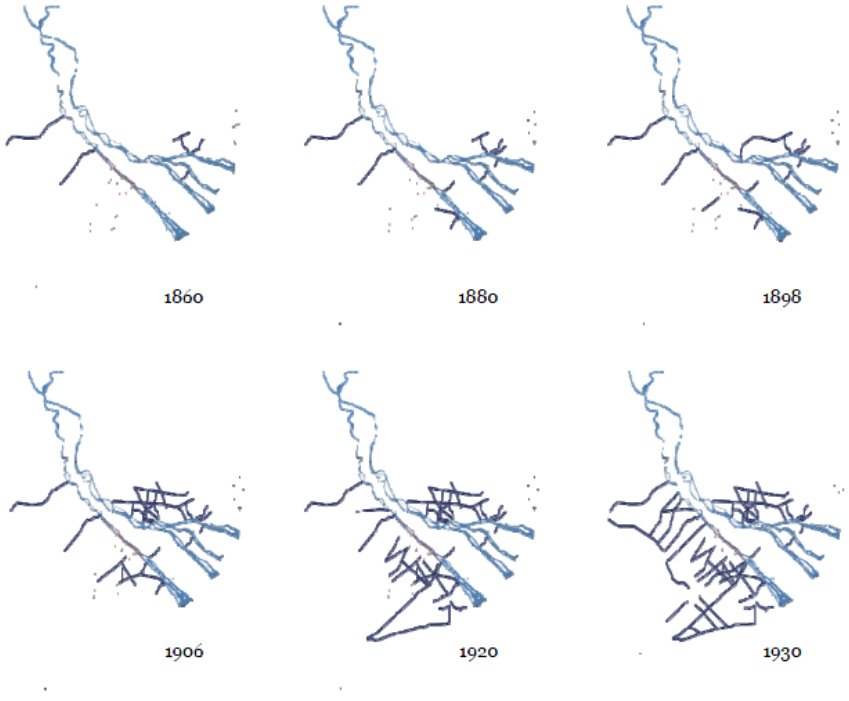
Dyke in Hong River built from 10 century (Ly Dynasty)



colonial water management
Gauthier J. 1930. Digues du Tonkin _ M6409-National Library of Vietnam



colonial water management: complex system of dykes for for sysem of rivers in the delta
Gauthier J. 1930. Digues du Tonkin, M6409-National Library of Vietnam



Taming the Swamp Chronology of Canal Excavations in the Mekong Delta (based on Biggs 2004)
Chế ngự đầm lầy Niên đại của việc đào kênh tại Đồng bằng sông Cửu Long (dựa vào Biggs 2004)

Taming the Swamp Canal excavations under Vietnamese (light blue) and French (dark blue) (based on colonial-era map, s.d.)
Chế ngự đầm lầy Việc đào kênh do người Việt Nam (xanh nhạt) và người Pháp (xanh đậm) (dựa vào các bản đồ thời thuộc địa)

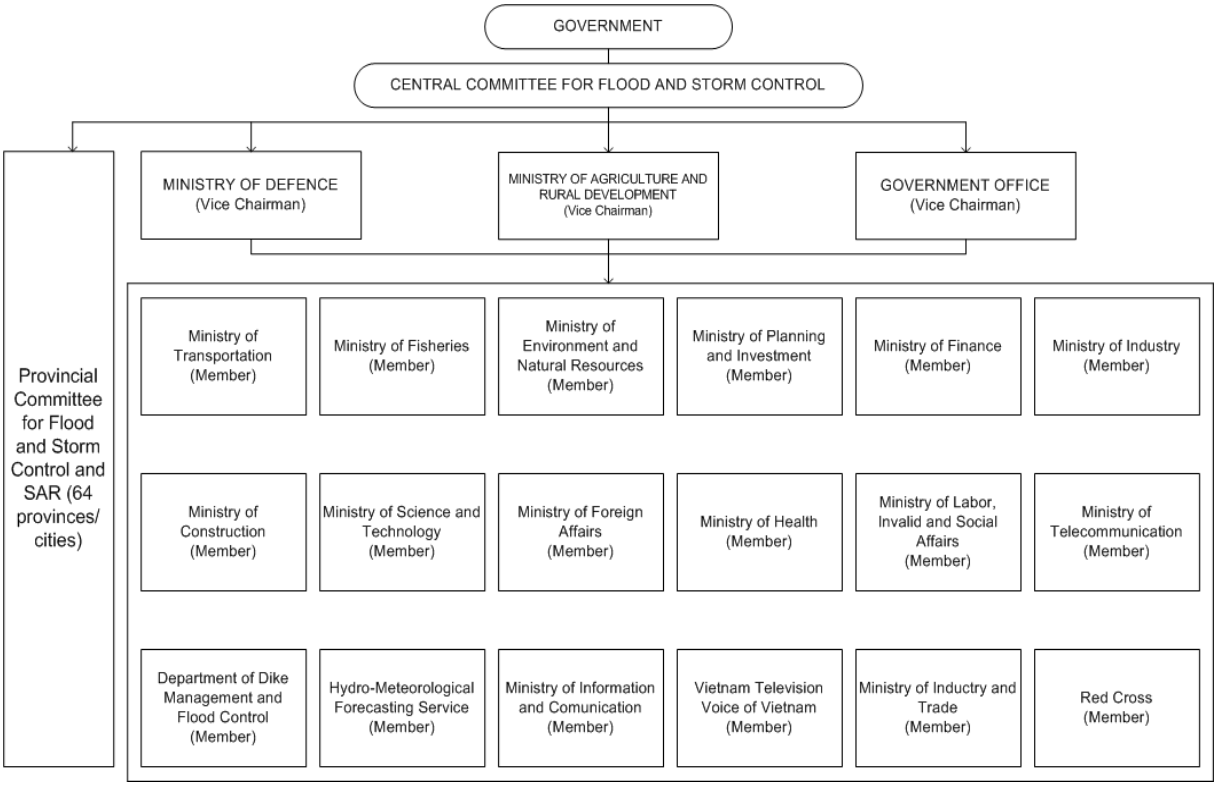
Large-scale operations & junctions as instigators for development (Gsell E., 1882); (National Geographic, 1993)

Tổ chức thực hiện mang tính tập thể trên tỷ lệ lớn và những chỗ hợp lưu của các con sông như là những nhân tố của sự phát triển (Gsell E., 1882); (Địa lý quốc gia, 1993)

The Central Committee for Flood and Storm Control

- CCFSC and the corresponding committees at provincial, district and commune levels, was established in 1946.
- inter-agency committee, comprised of 22 ministries and agencies, responsible for the formulation of flood and storm related policies and mitigation measures in Viet Nam.
- The Minister of MARD is the Chairman of the CCFSC and provides advice to the Prime Minister on major decisions.

Organization Chart of the Central Committee for Flood and Storm Control

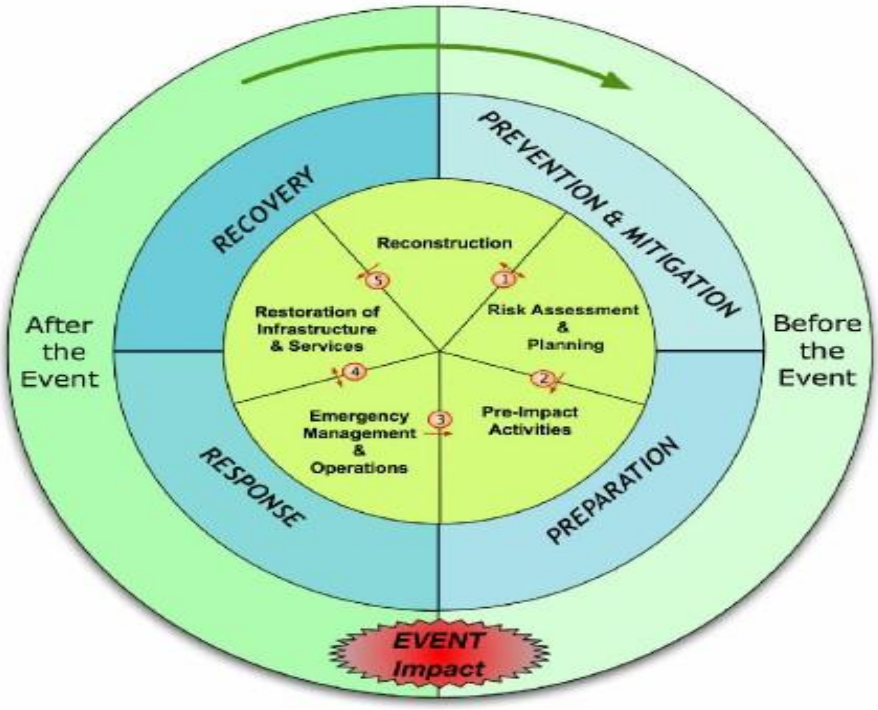


Responsibility of CCFSC:

- monitoring the planning and implementation of annual sub-national and sector specific disaster prevention and response plans;
- providing guidance to localities on disaster response and recovery;
- early warning dissemination and damage reporting and issuing instructions for mobilization of human resources and logistics for search and rescue, disaster response and recovery.

The National Committee for Search and Rescue

- Government's leading agency for search and rescue, established in 1996,
- chaired by a Deputy Prime Minister with the Minister of Defence as the permanent vice-chair. Other vice-chairs are the Ministry of Public Security, the Ministry of Transport and MARD.
- responsible for the preparation, organization and coordination of all search and rescue operations during disasters in conjunction with the Ministerial Committees for Search and Rescue under the authority of the ministries and the Provincial Committees for Search and Rescue under the authority of the Provincial People's Committees.



Before the event:

- Check for NDs prevention structure annually

- Finance , human resources for dealing with the NDs
- Long-term and annual planning for prevention and mitigation of NDs

During the event:

- Operating prevention structure
- People warning
- To mobilize rescue forces to protect human and infrastructure ,

After the event:

- Support for affected families
- Repair and recover the damaged structures

Laws and Regulation related to Natural Disasters

- Law - Law Disaster Control , Water Resources Law , Law on Dykes
- Ordinance on exploitation and protection of irrigation works
- Decree
- Circulars
- Directive
- Decision

2.6 Một số văn bản quy phạm pháp luật về QLRRTT

TT	Số VB	Ngày	Nội dung
I	**Luật**		
1	79/2006/QH11	25/12/2006	Luật Đê điều
2	15/2008/QH12	03/6/2088	Luật Trưng mua, trưng dụng tài sản
II	**Pháp lệnh**		
3	Sửa đổi, bổ sung	24/8/2000	Pháp lệnh Phòng chống lụt bão

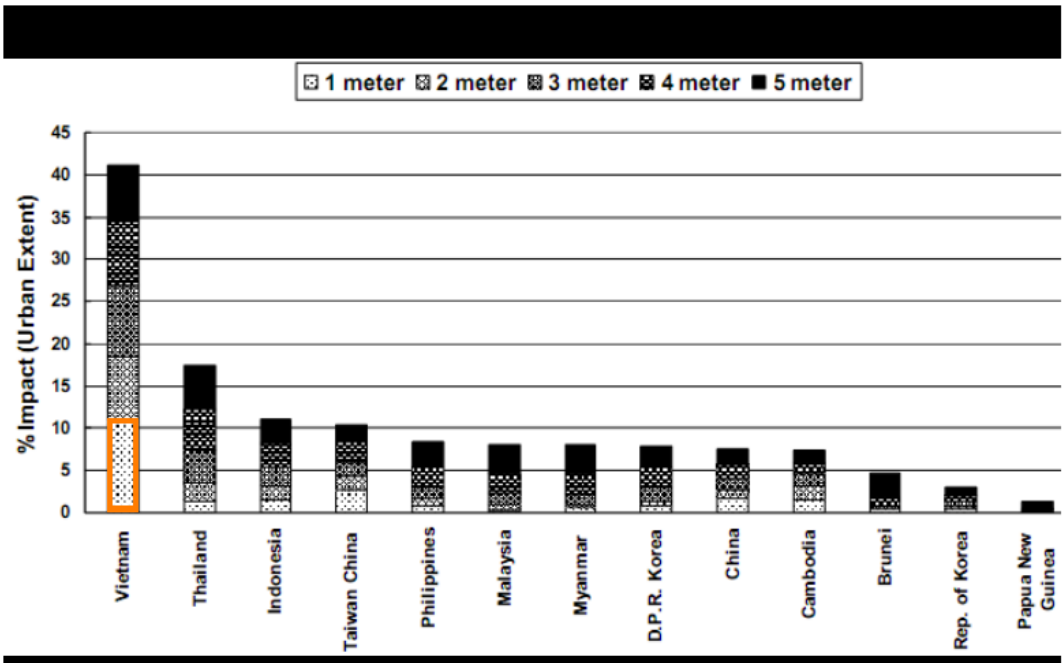
Budget

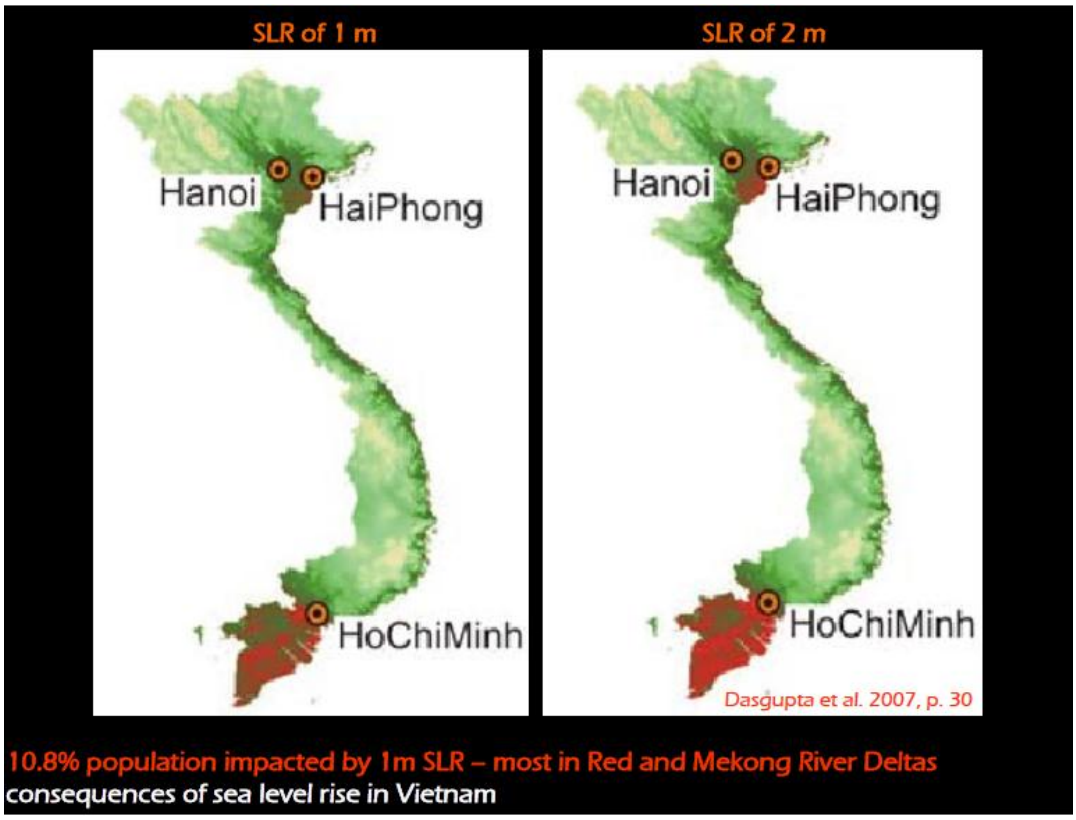
- Annual governmental fund
- The contribution of the all citizens and organizations "Decree No. 94/2014/ND-CP on the establishment and management of disaster prevention fund ", about one workday per person
- ODA projects
- Other projects for construction

Challenges under new context of Climate Change

increasing frequency & severity of natural disasters
Hanoi floods [November 2008]

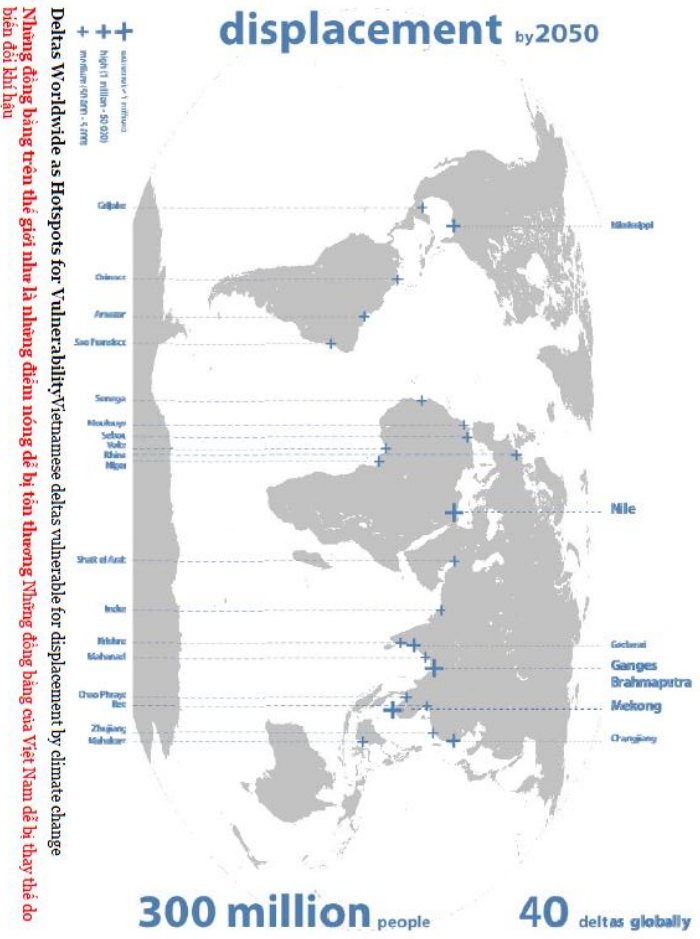
- In 2030, damages due to natural disaster in VN account up to 3-5% GDP (INDC)





Deltas Worldwide as Hotspots for Vulnerability Vietnamese deltas vulnerable for displacement by climate change

Những đồng bằng trên thế giới như là những điểm nóng dễ bị tổn thương Những đồng bằng của Việt Nam dễ bị thay thế do biến đổi khí hậu



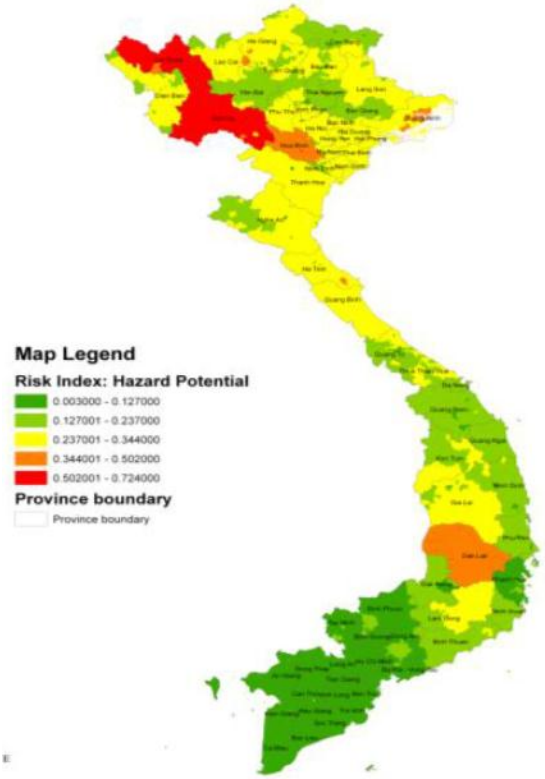
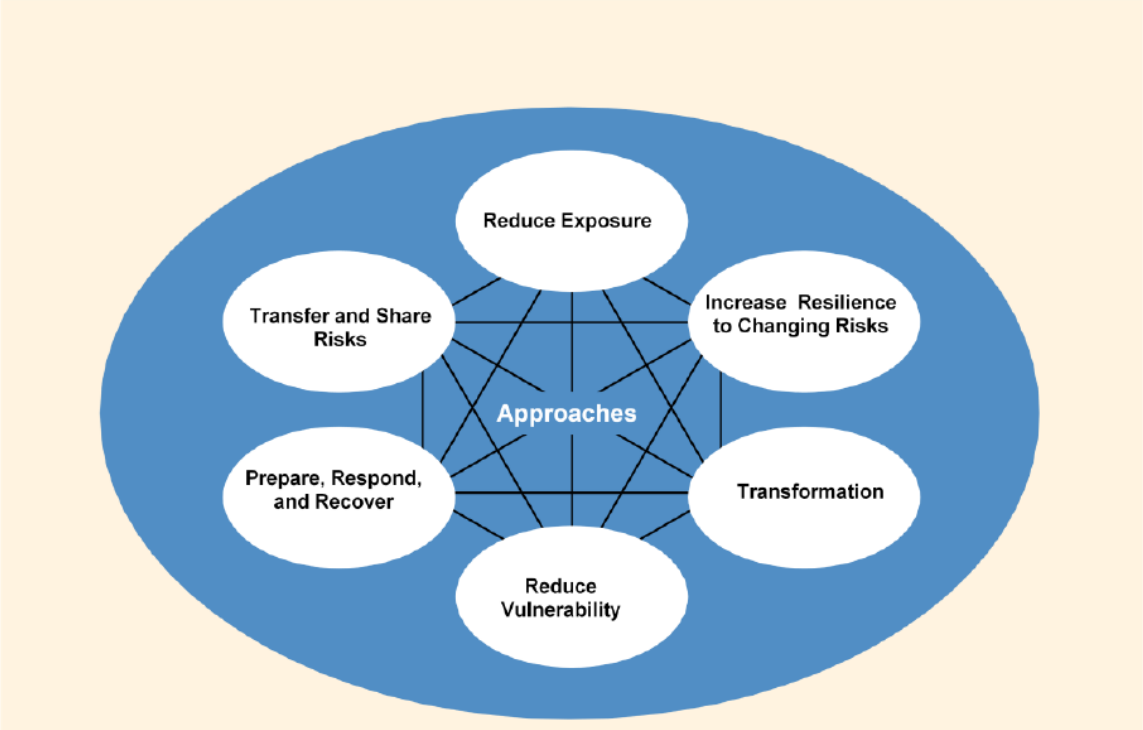
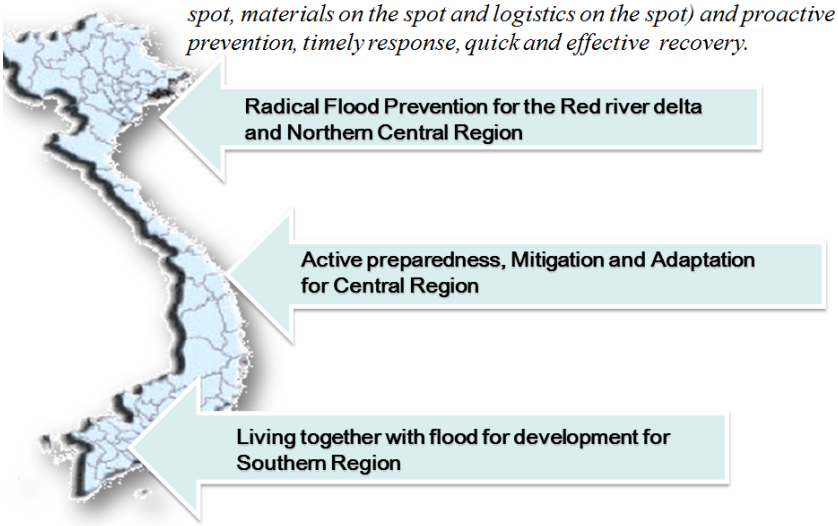


Figure SPM-2. Adaptation and Disaster Risk Management Approaches for reducing and managing disaster risk in a changing climate



National Strategy for Natural Disaster Prevention, Respond and Mitigation up to 2020

The principles used for disaster prevention, response and mitigation in Vietnam is the "four-on-the-spot" (command on the spot, man-power on the spot, materials on the spot and logistics on the spot) and proactive prevention, timely response, quick and effective recovery.



Basis for Establishing the National Platform in Vietnam (Decision 43/QĐ-TTg)

1. National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020.
2. Action plan for implementing National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020.
3. Community Based Disaster Risk Management Program
4. National target program to respond to climate change.
5. Climate change and sea level rising scenarios
6. Action Plan Framework adapting to Climate change of Agricultural and Rural development sector in stage 2008-2020
7. Law of Disaster Management (under construction)

NATIONAL PLATFORM FOR DISASTER RISK REDUCTION

A generic term for national mechanisms for coordination and policy guidance on disaster risk reduction that are multi-sectoral and inter-disciplinary in nature, with public, private and civil society participation involving all concerned entities within a country.

Objectives of National Platform for Disaster Risk Reduction and Climate Change

Adaptation

- To serve as a **coordination mechanism** to enhance multi-stakeholder collaboration and coordination for the sustainability of DRR activities

- To foster an **enabling environment** between stakeholders for awareness-raising on DRR, integrating DRR into development policies, planning and programmes;

- To discuss and address the **urgent need issues on DRR** in context of CCA in order to **strengthen** and **maximize** the effective of DRR activities

The Institutional Framework of the Natural Disaster Mitigation Partnership (NDMP) in Vietnam

The National Steering Committee of the National Target Program to Respond to Climate Change

- NTP-RCC was established in 2008 and is chaired by the Minister of MoNRE and with MPI and the Ministry of Finance being Vice-Chairmen.
- To work on principle of consensus by majority and to meet bi-annually.
- The Department of Meteorology and Hydrology and Climate Change of MoNRE is the Standing Office of the Viet Nam National Committee for UNFCCC and Kyoto Protocol (established in 2007).
- Several informal networks involved with disaster risk reduction and climate change adaptation also exist:
    - *Climate Change Working Group (CCWG)*
    - *Disaster Management Working Group*
    - *Joint Advocacy Network Initiative*
    - *UN Programme Coordination Group for Natural Disasters and Emergencies*

Typical Cases: Floods

- In past 50 years, the number of storms that affect Vietnam tend to be unchanged or reduced slightly.
- But storms tend to rise in coastal mainland and south -central and the southern Vietnam.

- Medium and strong hurricane storm tends to decrease, but very strong storms tend to rise.
- Many large and unusual storm made landfall in Vietnam in all 3 regions .
- Central is the region most affected by hurricanes, especially two big storms Ketsana 2006 and Xangsane 2009.
- The South rarely suffer from storm, but hurricanes Linda (Typhoon No. 5 in 1997) has caused heavy losses for the southern provinces
- Typhoon Son-Tinh in 2012 caused much damage to the north

Responses

Linda (1997):

- Forecasts and warnings : National Hydrometeorology Center
- Inform local authorities and implement solutions against storms : Central and Local Flood Prevention Committee
- Evacuation, rescue

Existing:

- Difficult to inform the off-shore fisherman
- Southern people have limited experience against storms

Lesson Learned

- Forecasting and Early warning
- Enhance awareness of communities
- Enhancing resilience of communities in high-risk areas (relocation , mangrove planting , building storm)

  The attention of governments is important, thereby mobilizing the resources of the whole society

DAY 2

ATKISSON'S COMPASS & ACCELERATOR METHODOLOGY FOR INTERDISCIPLINARY CLIMATE RISK REDUCTION PROJECT MANAGEMENT by Robert Steele

A Global Network Dedicated to Transformative Change

Current and Past Clients Include:

Levi Strauss & Co. • Ernst & Young • Nike • Baltic 21 (the 11 nations of Northern Europe) • European Sustainable Development Network • Brother, Inc. (Japan) • Earth Charter International • Swedish SIDA's Advanced International Training Programs • United Nations Division for Sustainable Development Egyptian National Competitiveness Council • Government of Singapore • Greater New Orleans, Inc. • SEIYU (Japan) • SERDP - Strategic Environmental Research & Development Program (US Government) • Seliger Forum 2010 (Russia) • Sustainable Fashion Academy • States of Queensland, Victoria, NSW, and South Australia • Stockholm County • Sustainable Seattle • Heinz Endowments • Toyota • UNEP • UNDP • Nile Basin Initiative • Bank of Indonesia • Volvo Cars

The AtKisson Sustainability ACCELERATOR Toolkit

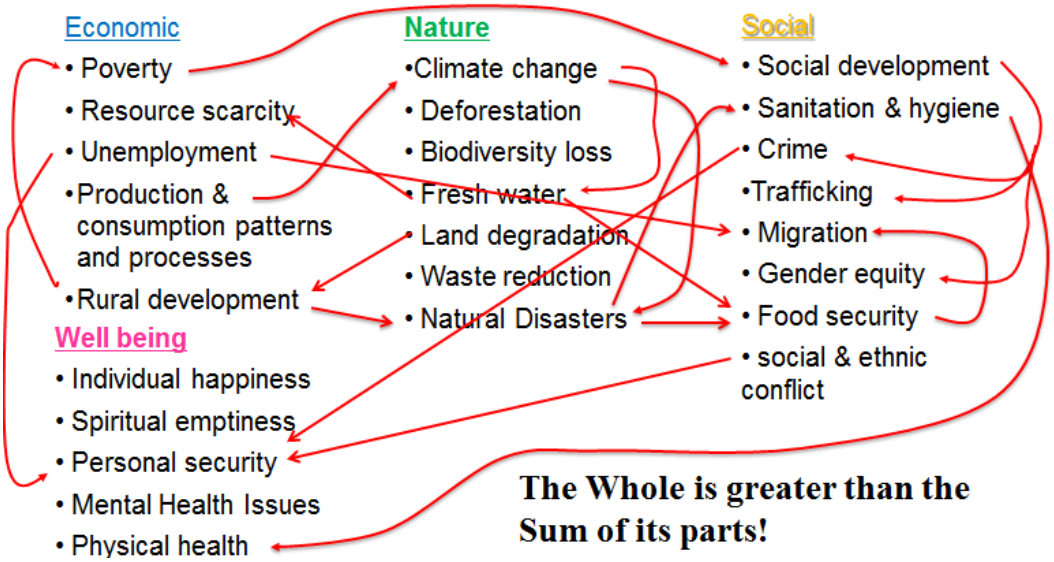
Tools, Methods and Processes to Support Sustainable Development:

Compass Pyramid Amoeba StrateSphere

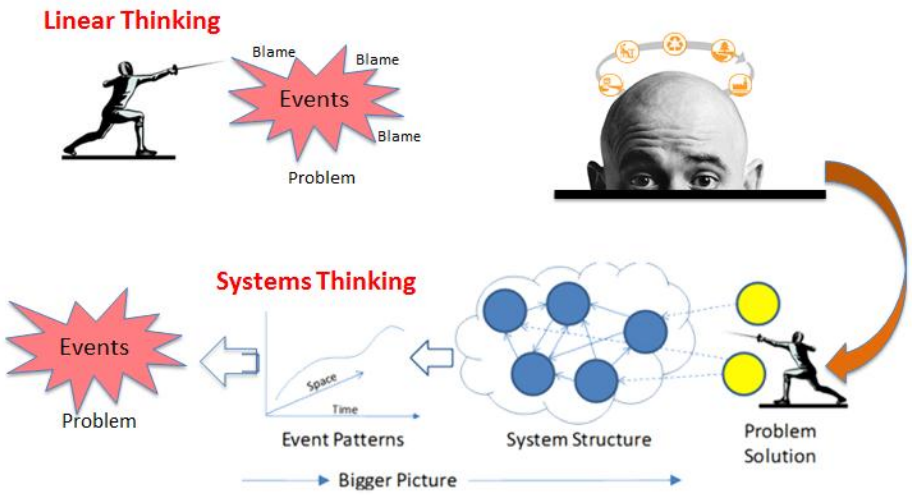
Goal of the Accelerator toolkit:

To engage more and more people, to make more change for sustainability, more effectively, and more quickly.

Our Sustainable Development Challenges link across sectors:



The Needed Transition – From Analytical (Linear) Thinking to System Thinking:



What are systems**?**

"… groups of discrete elements that work together to make a whole".

Systems are bound together by the laws of cause and effect, and governed by flows of information, energy and materials.

Note: *People give definition to systems based on an idea of what should happen at a given point in time. Thus, systems have a purpose.*

System Thinking …

"is seeking to understand the connections among elements in a system

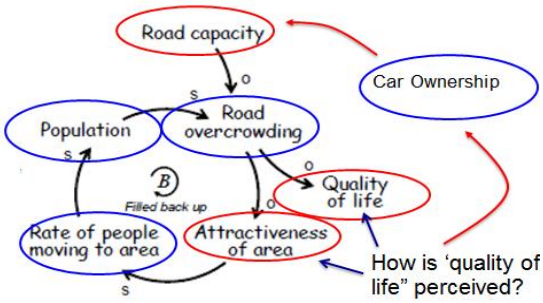
- what depends on what,
- what is causing what,
- where are information flows,

- where control decisions are made,
- what information flows are critical,
- And how best to manage or intervene in the system for desired results".

The field of systems thinking has generated a broad array of tools that let us:

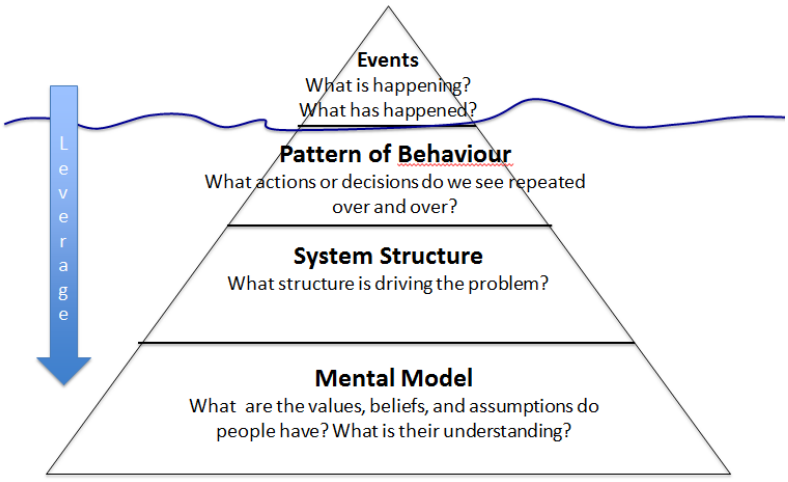
i. graphically depict your understanding of a particular system's structure and behavior,
ii. communicate with others about your understandings of the system;
iii. design high-leverage interventions for problematic system behavior.

Systems thinking helps us to move the focus away from **events** and **patterns of behavior** (which are symptoms of problems) and toward **systemic structure** and the underlying **mental models**.

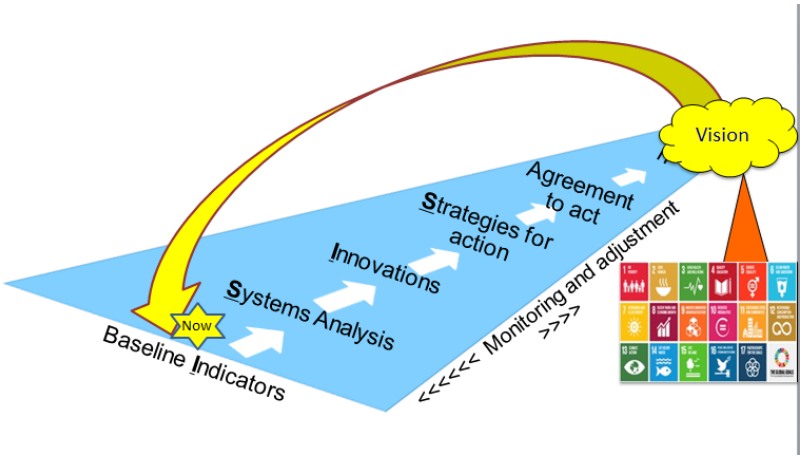


Source: Senge, Peter, The Fifth Discipline, 1996.

The System Iceberg:



Accelerator uses a 'back casting' approach to integrated planning.



AtKisson's VISIS Method simplifies this to make it easier to use and communicate in practical ways.

The Foundational Tool: The Compass

"*An Orientation, assessment, planning and collaborative action tool for sustainability and transformation*"

The Sustainability Compass is designed to accommodate many kinds of differences: cultural, sectorial, geographic, etc. It is also designed to interface well with other common frameworks (e.g. GRI, ISO 26000, SDGs)

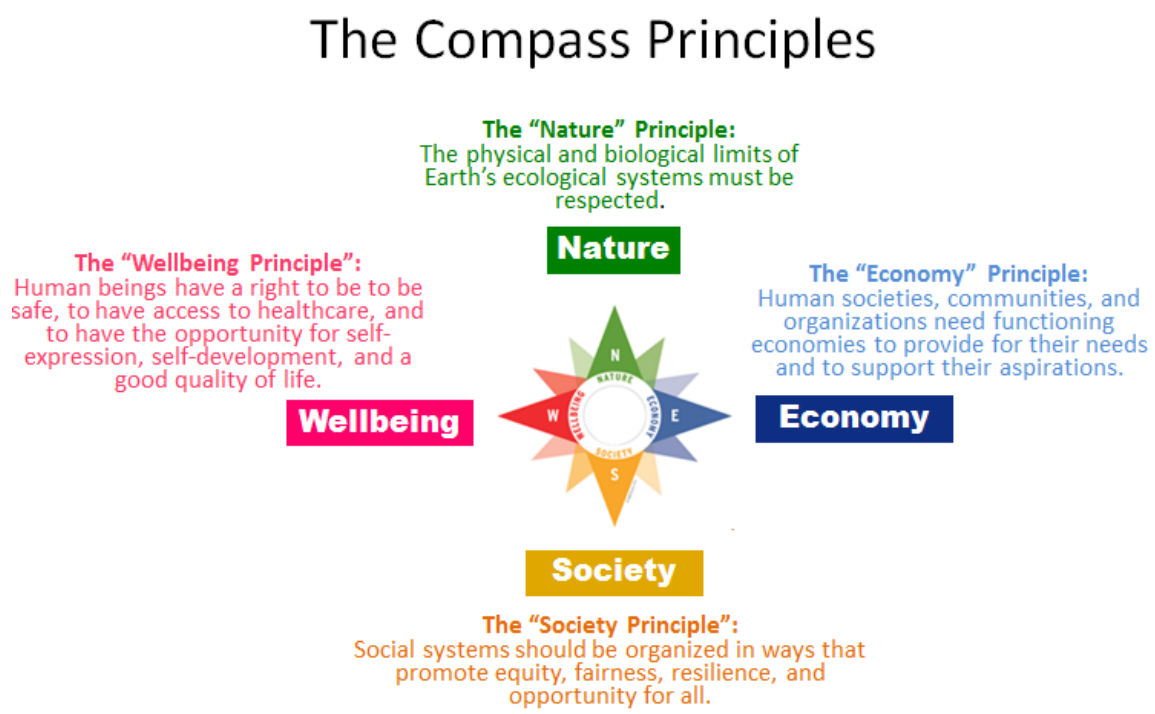
COMPASS is the foundation of the toolkit.

Assist organizations to do all of the following…

- *Create better understanding of sustainability*
- *Create a sustainability vision*
- *Manage stakeholders in a sustainability process*
- *Create or manage a set of sustainability indicators*

- *Create an Overall Sustainability Index*
- *Assess the sustainability profile of a company*

Built into the Compass approach is a set of core guiding principles about sustainability.



The "Integration Principle":

All four dimensions of the Sustainability Compass are interconnected in a web of cause-and-effect relationships. They are interdependent on each other.

- The Compass approach is grounded in the science of system dynamics and in general understanding of how complex systems behave.
- In recognition of this principle, governance and management systems should strive to achieve optimal results across all four Compass Points in an integrated way.

The Compass Points in Practice:

- ***N = Nature*** =

  Environmental impact, resource use, waste, ecosystems and habitat, water, energy, climate change

- ***E = Economy*** =

  Production, consumption, employment and work, money, investment, debt, business, innovation

- ***S = Society*** =

  Governance, equity, transparency, security, culture, institutional management, levels of trust

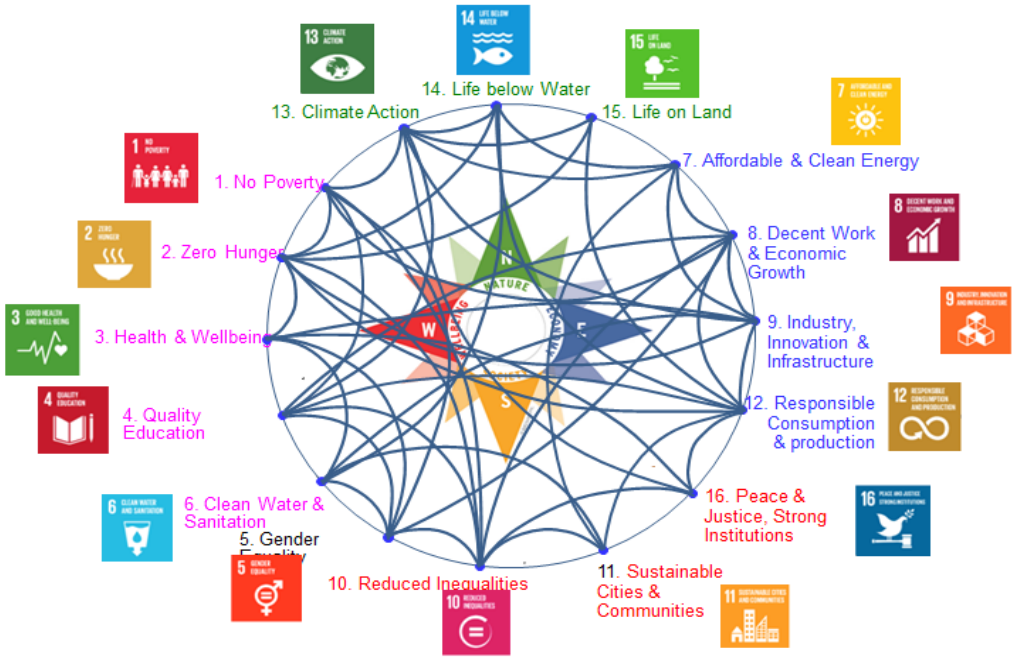
- ***W = Wellbeing*** =

  Health, education, self-expression, happiness, relationships, family, creativity, quality of life

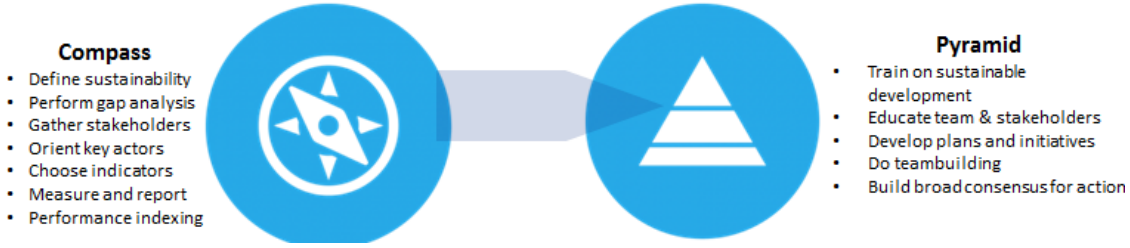
It helps us think about issues from many different perspectives.

The Sustainability Compass also lines up well with the 17 SDGs.

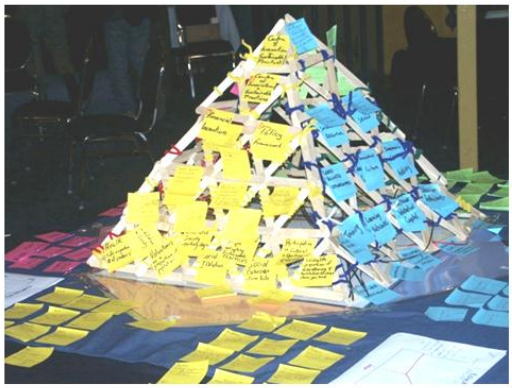
The Compass is a systemic integration tool.



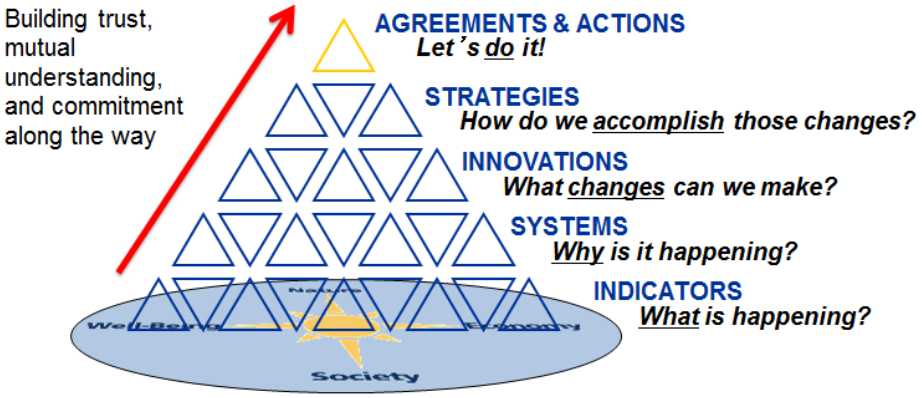
Pyramid *helps groups move from analysis to action, while building learning and consensus.*



Compass + VISIS = PYRAMID



The Pyramid works with the Compass and the VISIS Accelerator method.



Pyramid

- ✓ A Tool for Collaborative Strategic Planning, Initiative Design, Professional Training, and Educational SD Programming

- ✓ Built around the VISIS sequence

- ✓ Used for collaborative group learning and planning processes
- ✓ Guides people quickly (takes 1-2 days or 1 years) through the entire learning/ planning/ action cycle
- ✓ Produces a 3-D record of the results ... and strong consensus on action

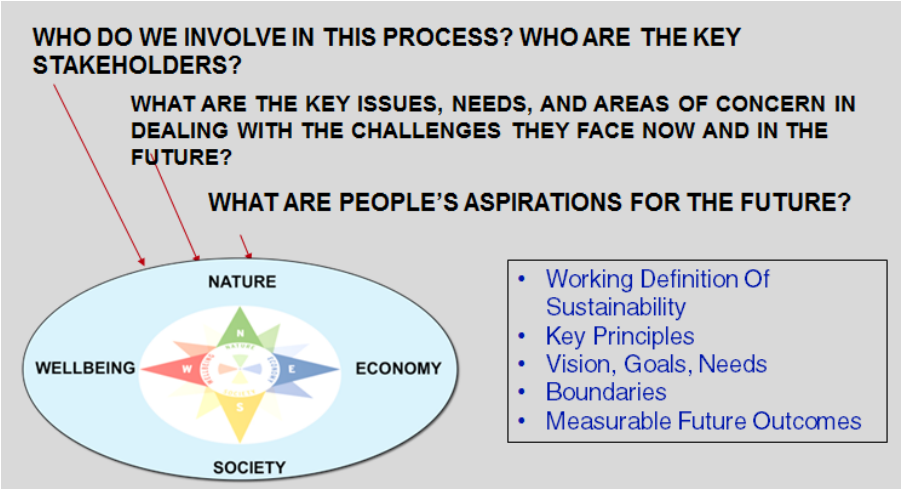
A workshop process that combines …

- Understanding sustainability
- Selecting and interpreting indicators
- Basic systems analysis
- Innovating for change
- Strategic planning for sustainable development
- Teambuilding

Pyramid has been used by hundreds of groups around the world

AtKisson Sustainability Accelerator

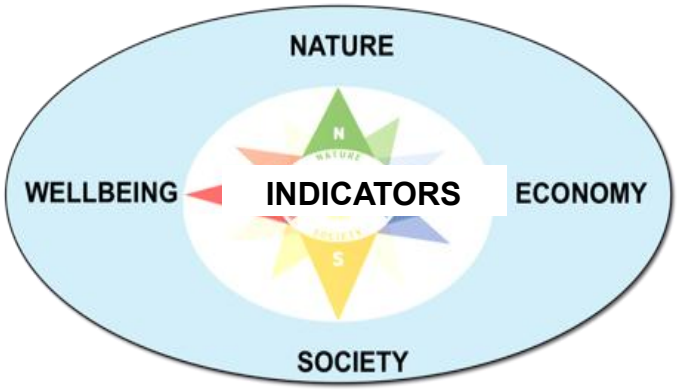
Foundation Level - Clarifying your purpose, principles, and guiding definitions.



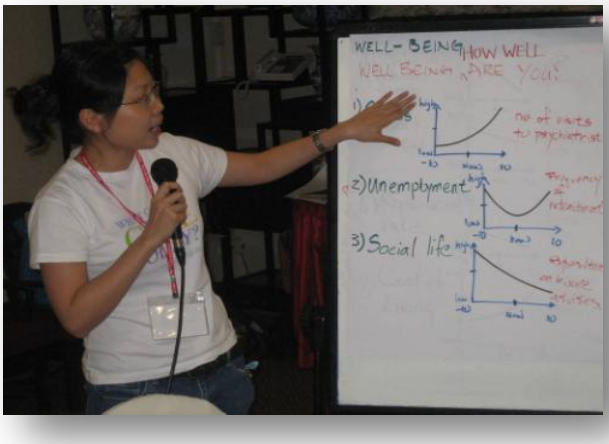
Indicators Level - Baseline Information about critical & long-term trends

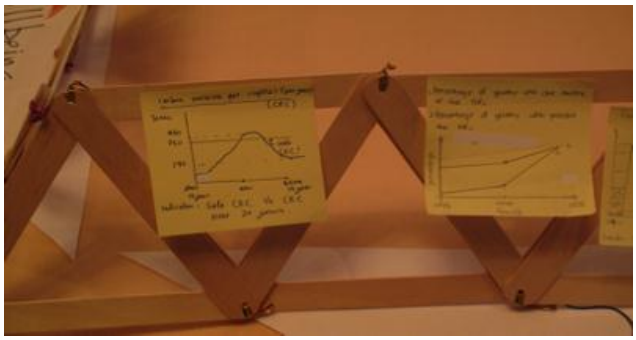
Objective: To construct a responsive ***Sustainability System Status Indicator*** framework.

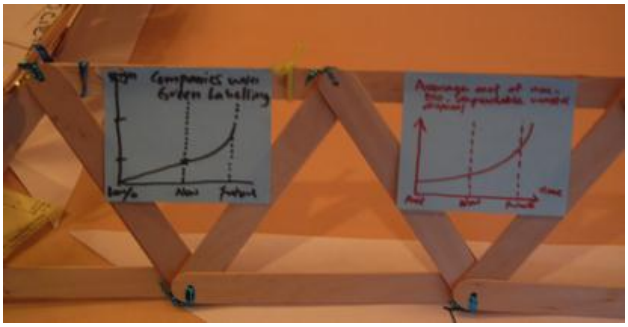
At the Indicator Level, groups / teams are collect and select data, both formal and informal, on trends and issues working for and against progress toward the vision and/or goal and desired future Outcomes.



- ✓ Using multi-disciplinary teams or consultation processes, covering all aspects of sustainable development
- ✓ Using a framework to cluster the indicators
- ✓ Using formal data/indicators when available
- ✓ Use informal/subjective knowledge of prevailing trends, when formal data is not available





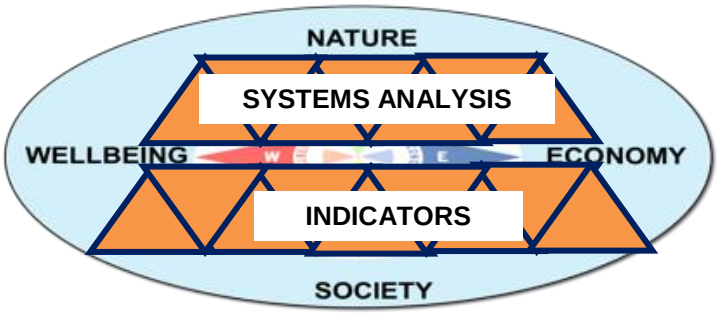


Systems Level - Multi-disciplinary teams review the indicators and look for cause-and-effect links, including chains of cause-and-effect.

- ✓ Discussion to identify important causes and drivers of change, and to share other systemic insights

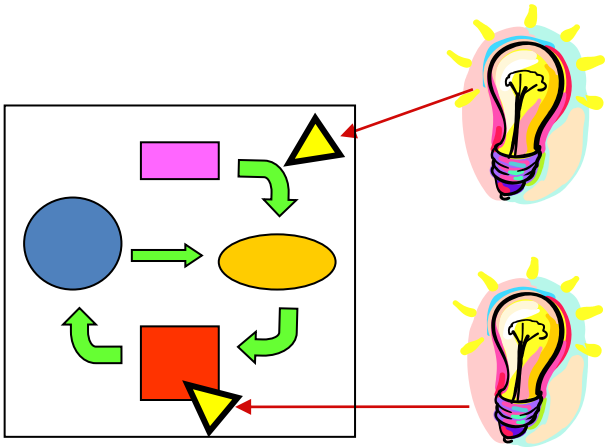
- ✓ Group sketching to illustrate important links and webs of connection between issues

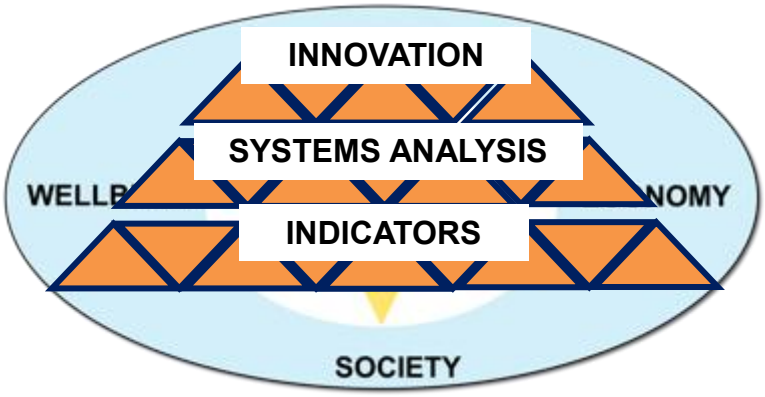
- ✓ Formal systems modeling



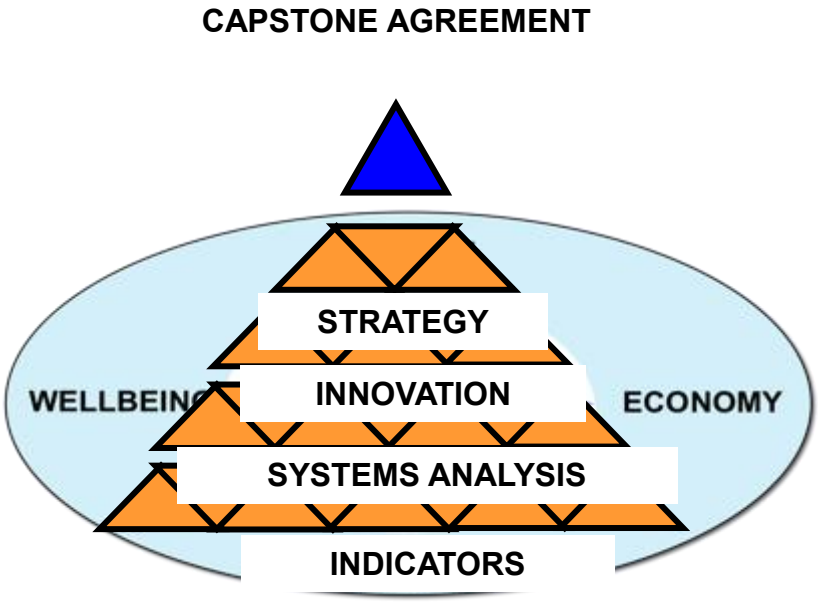
Innovation Level - New Ideas that can change the System dynamics and outcomes.

Identification of options, interventions, changes that can be made at key “leverage points” (entry points) in the system.





The Capstone Agreement - Making an agreement to act together



Proposal for integrating and supporting the other initiatives in order to create a synergistic and holistic sustainable plan.

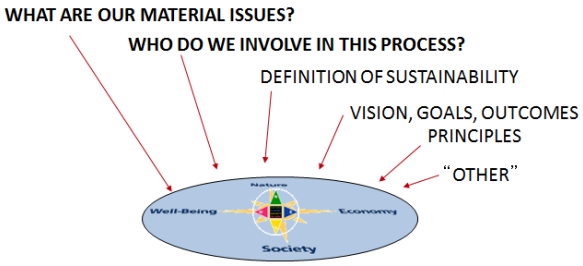
Baltic Countries' Environmental Ministers The Riga Proposal: Agenda 21 for the Baltic Sea Region

A Short Compass Exercise

Planning for Community Climate Resilience & Disaster Risk Management & Response-Interdisciplinary Climate Change Risk Reduction and Sustainability Resilience Building

Scenario Goal: Develop the foundational systems based situational scoping for resilient long-term climate change risk reduction & sustainable development management plan.

i) Pyramid Level 0 – Preparing the Ground



Who do we involve in the process?
What do we mean by sustainability?
What are out priorities?

Level 0 Tasks:

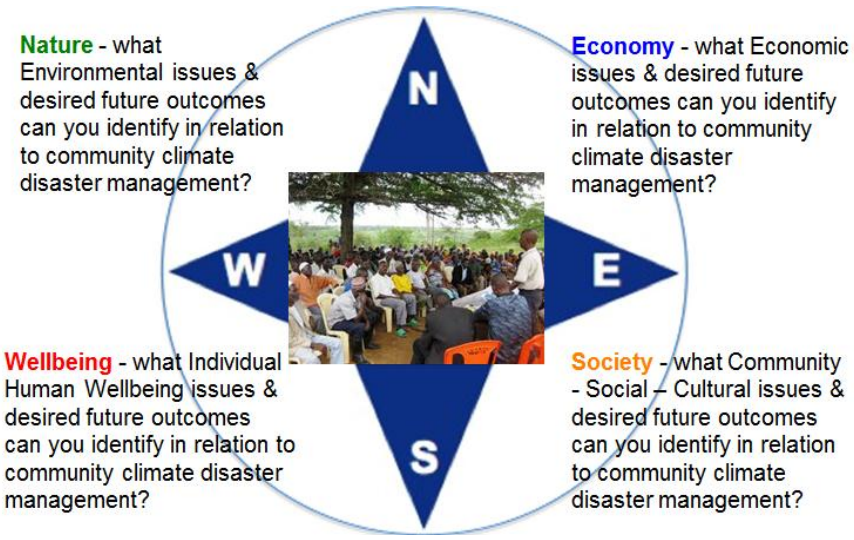
1. Identify which government agencies and other key stakeholder groups that should be involved in this process. - Document these for each Compass Point on the Compass Template

2. In 1-3 sentences. Define what an effective climate change risk reduction management plan would need to look like that reinforces the goals of sustainable development. Record at the top of your Compass Flip chart paper.

3. For each of the four Compass directions, identify the 4-7 priority **material needs** that will provide the foundational focus of this integrated management plan.

> Material needs include those things that have a direct or indirect impact on the involved stakeholders and your ability to help or hinder the achievement of goals and objectives of your interdisciplinary climate change risk management plan for all stakeholders and society at large.

Compass Issue Identification



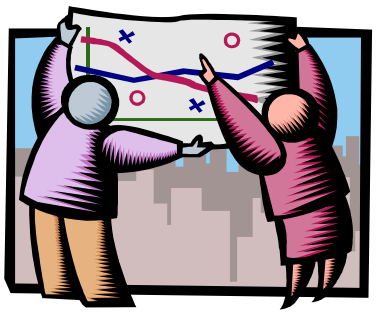
Record all of your information on your Compass.

ii) Pyramid Level 1: Indicators

Information about critical & long-term trends

INDICATORS

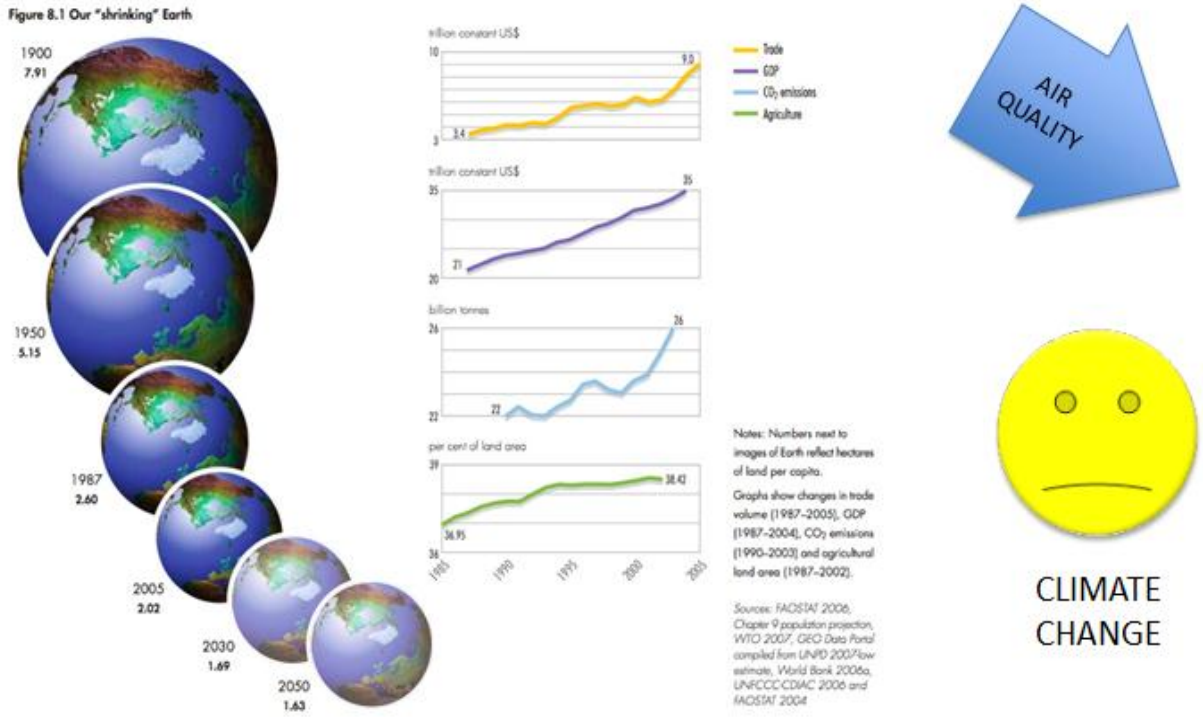
What is happening? What are the trends? Where are we headed?



Sometimes we can see what's happening with our own eyes ...

... and sometimes we can't

Indicators are information signals about **what is happening ...** data interpreted in a way that makes it easier to understand.



Level 1 Indicator Tasks Summary

1. Review your priority materiality issues and desired future outcomes.

2. Select one "good" Indicator that can provide the necessary data for each issue / outcome set.

Note: Remember who is the stakeholder group who needs to engage with this indicator.

(feedback → response)

3. Develop a Behavior over Time Trend graph

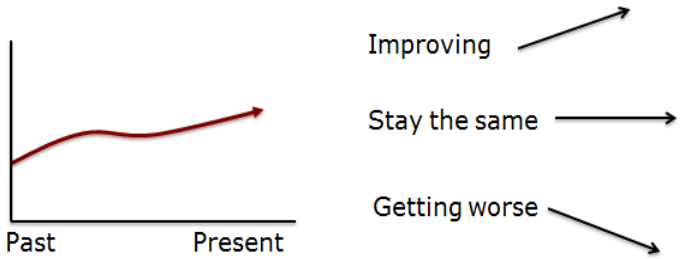
4. Record your information on the Post-it Notes provided.

Level 1 Task: Choosing Sustainability Indicators

Instructions:

1. Identify 1 good Sustainability Indicator for each of your priority desired future outcomes for each Compass point.

2. Make a general trend graph of what your feel is the direction and rate of change of each indicator over the past 10 years.



Remember: Indicators are measurements and sources of feedback to determine current status and changes in conditions that are relevant to your goals and objectives.

(e.g. ensuring Sustainability of our company / organisation)

Make sure to think about who will be engaged with this information (i.e. which stakeholders will be interested in this data?)

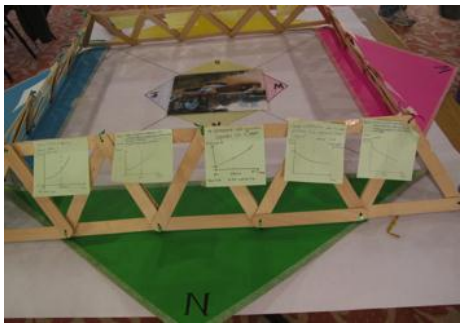
Seven Criteria of a Good Sustainability Indicator

- ✓ Relevant . . . i.e. directly connected to the issues you are concerned with
- ✓ Measurable . . . objective or subjective, qualitative or quantitative
- ✓ Reliable . . . i.e. you can trust the data
- ✓ Understandable . . . i.e. the average person can "get it"
- ✓ Clear in Direction . . . it is obvious which direction is “good”
- ✓ Responsive . . . they react when you make change
- ✓ Linked . . . causal linkages with other indicators across sectors

Replicate on Post-it Notes and Post on your Compass template. Example:

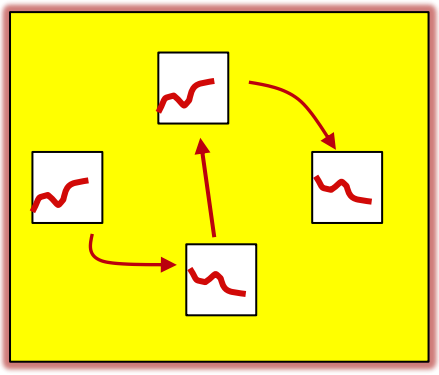
Nature
Issue: Water pollution in surface water sources.

Indicator: Number of surface water sources that meet Class 2 Standards (good water quality).



iii) Pyramid Level 2: Systems

- ✓ Why is it happening?
- ✓ What causes what?
- ✓ What is the most important thing making our



trend happen?

Pyramid Level 2: Identifying Linkages

Step 1: Identify Cross Systems Linkages

1. Discuss with your group the key linkages that you can find between the different Compass Point Indicators. Share your opinions and findings with the others.

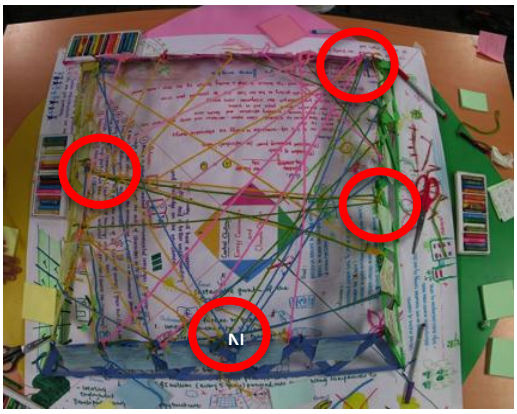
2. Use your markers to draw arrows to draw the links between different indicators.

3. Identify hubs or concentrations of system links (high impact leverage points)

Step 1: Consider Linkages

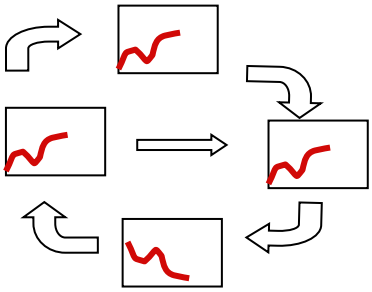
Note: In a Pyramid Process, we would use the colored yarn to physically link together (tie) the indicators that you see some form of causal relationship between (whether it be direct or indirect relationship).

Step 2: Identify your Leverage Points



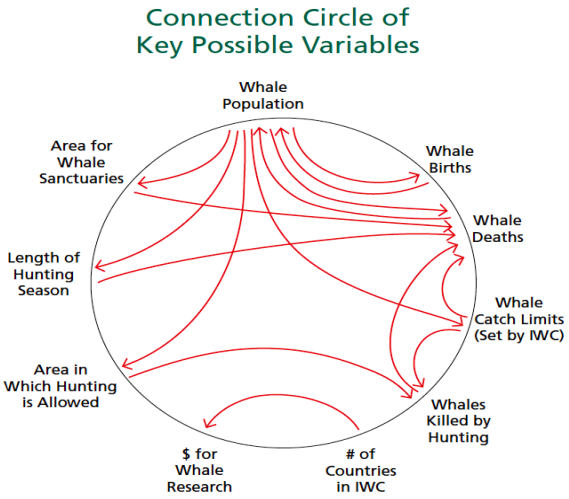
The bottom line of systems thinking is leverage - seeing where actions and changes in structures can lead to significant and enduring (sustainable) improvements. Thus, a *leverage point* is a place in a system's structure where a solution element can be applied.

Systems Diagramming Exercise: Using Connection Circle



Identify one or more important feedback loops that can have implications for long-term sustainability in your company.

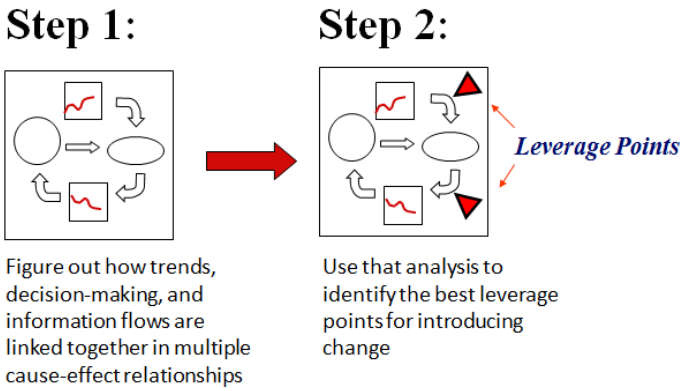
Step 3: Creating a Systems Connection Circle



Task

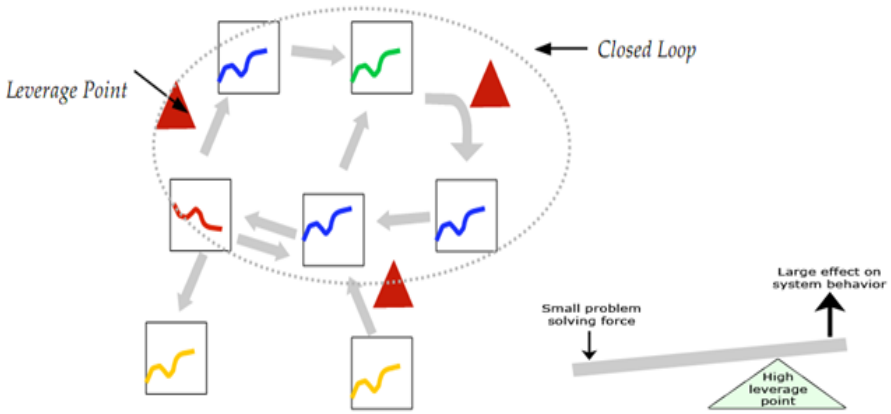
1. Draw a large circle on your flip chart paper
2. Write all the key indicators from your Compass Point around the perimeter of the circle, along with all the indicators that you have identified connections to with the colored yarn.
3. Draw the linkages that you find between each variable with a curved line, and with the arrow head pointing to the variable that is influenced by the other.
4. After all variables are connected, count the number of lines going out from each variable along with the number of lines coming in to each variable (e.g. 5/8), and record this next to the variable on the flip chart paper.

Level 2 System Analysis



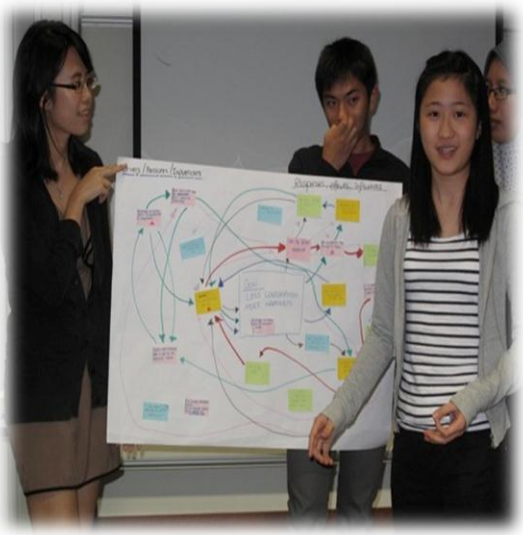
Finding the Leverage Points for System Intervention

Leverage points are places in your system map where you can intervene with a projects, program, technology, policy, etc. that will change the system relationships towards the direction that you want and be reflected in your main Indicator.



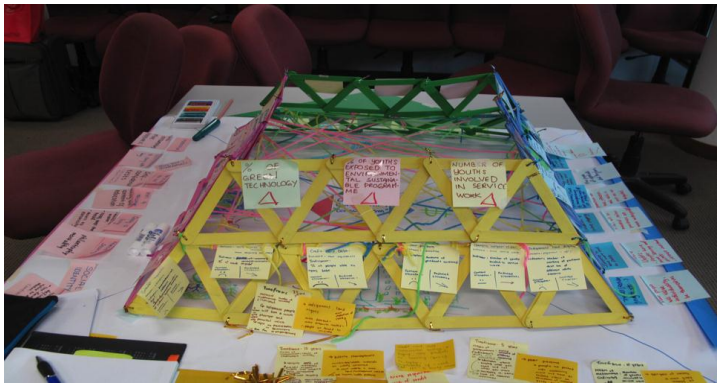
Step 3: Compass Group System Presentations

Each Compass Team …



- Identifies their central indicator and what is the goal you want to achieve
- Identifies the main feedback loops and tells the story.
- Identify the key leverage points for each loop.
- Why is this leverage point so important for focused intervention for climate change risk reduction and SD?

Construction of Pyramid Level 2 Systems



AtKisson Accelerator Resources

Book: The Sustainability Transformation

(AtKisson, Routledge/Earthscan, 2010)*

The *Accelerator* tools (based on

the VISIS method)

See http://AtKisson.com/tools

Step 2:

Free simplified version:

Accelerator Lite http://AtKisson.com/acceleratorlite

*Note: The method was originally known as “ISIS” but this was changed to VISIS after the acronum became associated with the Islamic State in Iraq and Syria.

Sub National Level …. Sustainable Pittsburgh

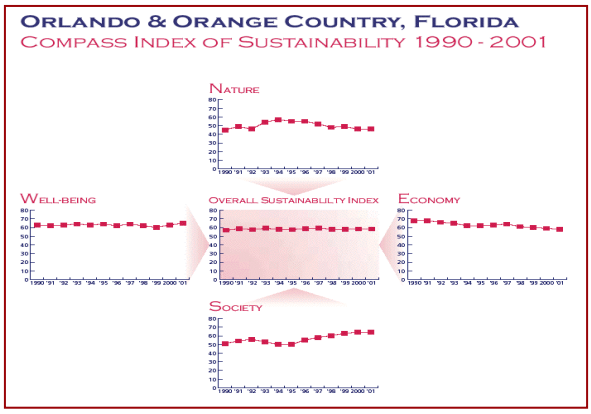
- Regional Outreach Strategy
- Compass Report and Community Indicators Handbook

Results:

- Contributed to Launch of Smart Growth Partnership
- Pyramid Workshop to Train Partnership Founders in S.D. and Generate Strategic Options

Sustainability Indicator Project Orlando: Healthy Community Initiative

- *Compass Index*
- *Pyramid Strategy*
- *Expert Forums on Linkages*
- *Sustainability Awards Program*



Results:

- ***Local funders use results to set funding priorities***
- ***Political leaders use to focus attention on system drivers***

Sustainability Indicator Projects - New Orleans/SE Louisiana: Top 10 by 2010

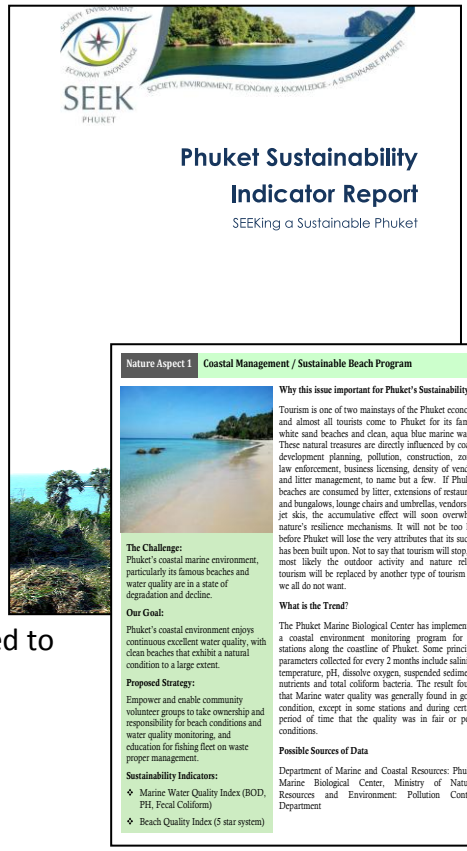
Process

- Regional multi-stakeholder dialogue process
- Compass-based indicator system
- Pyramid-based strategic planning (behind the scenes)

Results to Date:

Direct impact on regional economic development strategy and foundation giving as well as new insights on key challenges facing region ... and the leverage points to address them.

Sustainable Phuket Initiative: Developing Sustainability Indicator Framework



Phuket Sustainability Indicator Report was presented to the Phuket Governor on 22 November 2013.

Sustainable Community Development

- Nine work groups met three times to develop “visions, goals, and metrics
- All work groups brought together for intensive one-day working session using Pyramid

Source: http://www.sustainablepittsburgh.or

Results:

- Rough draft of indicator report
- Estimate of long-term trends
- Rough draft systems analysis

- 100s of ideas for innovation

Consensus list of top 25 initiatives

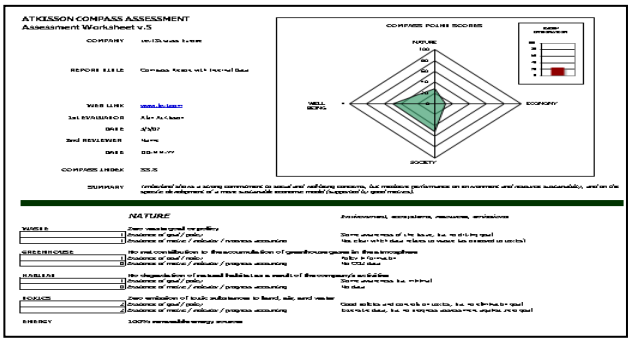
Regional Policy Making

- Eleven Baltic nations in a cooperative initiative for regional sustainable development
- Mandate from the Prime Minister level
- Driven through government ministries, but multi-stakeholder in character and governance
- Seeking a new strategic mandate for 2004-2010
- Adopted VISIS / Pyramid to develop a new strategy
- Process to culiminate with Prime Ministers summit in June 2004

Community Development of Multi-sector stakeholders. Molby, Sweden

Corporate Sustainability with Indonesia Business Sectors

GOAL: promote sustainability scheme to business community and assist the companies to have long term commitment toward sustainability, measurable progress, and more accountable sustainability report.



- PT ANTMA tbk (mining industry)
- INCO Mining tbk
- Losari Eco-Resort & Spa
- Indah Kiat Pulp & Paper
- Indonesia Power
- Bank Negara Indonesia (BNI)

Result: All companies were able to develop their own specifically tailored Sustainability Indicators to support companies' sustainability performance.

Tibet: Women's Empowerment

Zambia: River Management

LFA FOR PROJECT MANAGEMENT RISK REDUCTION PROJECT DESIGN & IMPLEMENTATION)

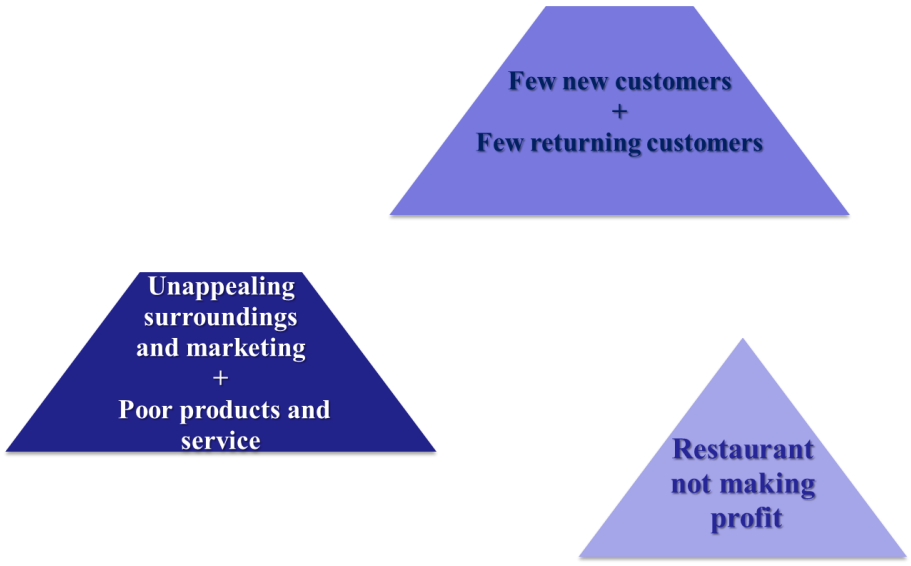
by **Prof Kanayathu Chacko Koshy**

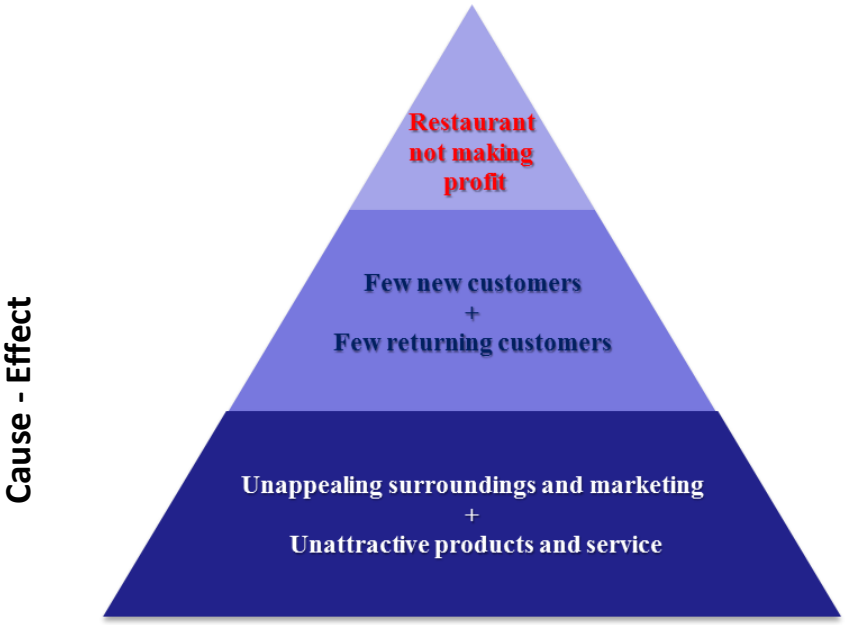
What is LFA?

Logical Framework Analysis/Approach

… it is an approach to develop well analyzed and logical project framework & activities…

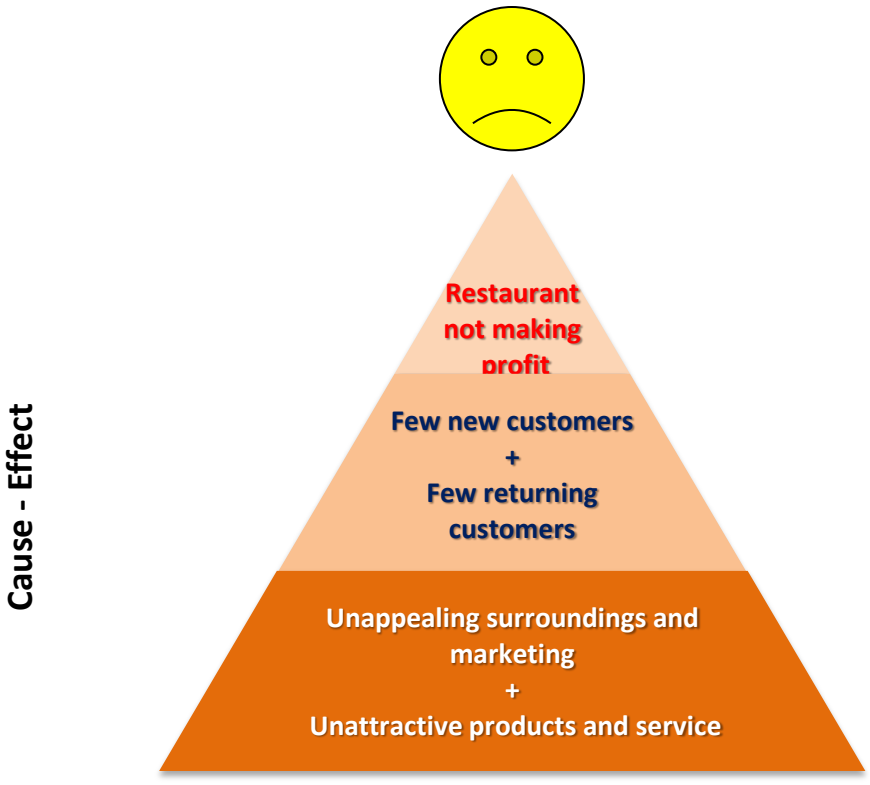
Analysis



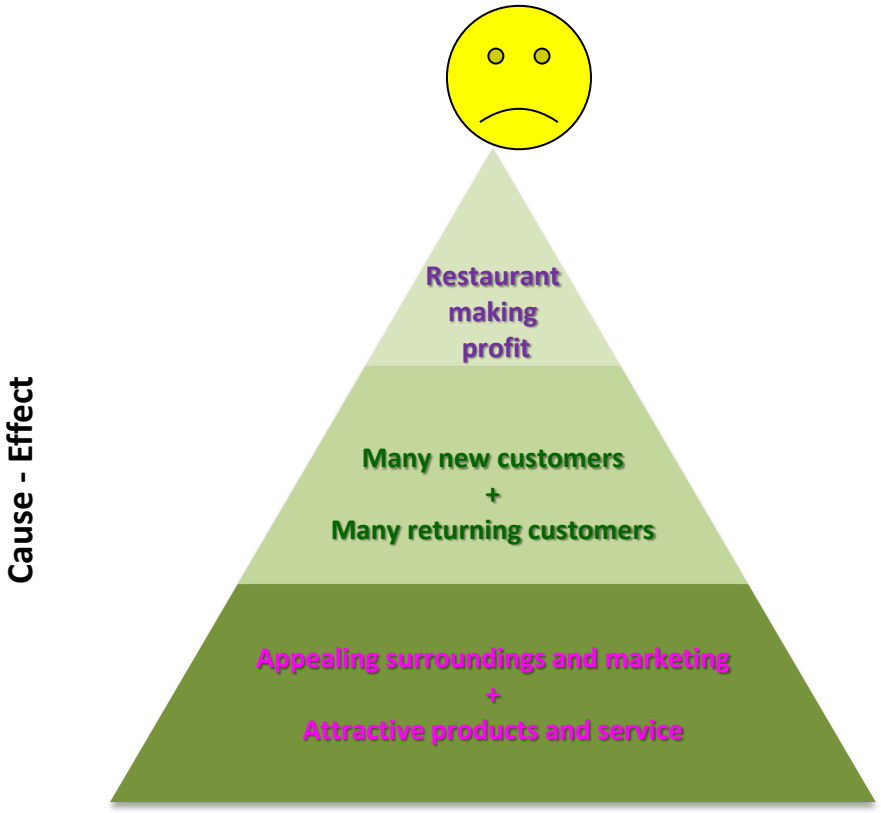


Problem Tree

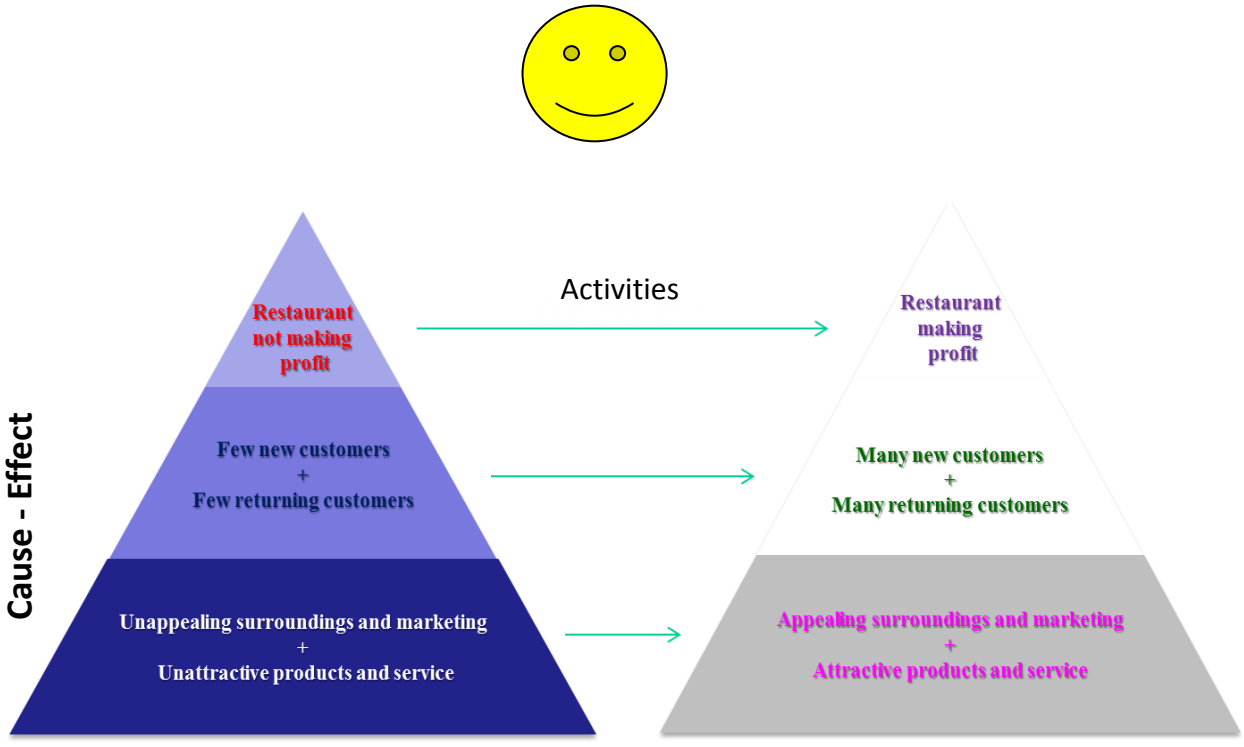
Planning



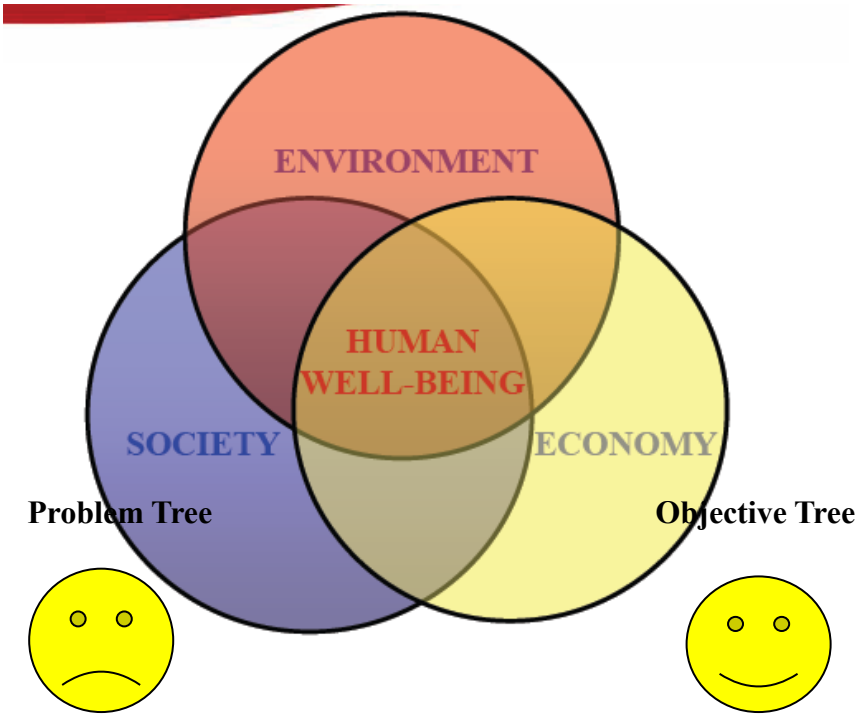
Problem Tree



Objective Tree



Triple Bottom Line of Sustainability



LFA Phases

1.ANALYSIS PHASE → 2.PLANNING PHASE → 3.IMPLEMENTATION PHASE

Phase 1- Analysis Phase

1. Stakeholder Analysis

Stakeholder- People, groups, institutions etc. that are likely to influence or be influenced by the project, e.g.

- Decision makers
- Implementers
- Donor partners
- Target groups
- Beneficiaries

2. Problem Analysis

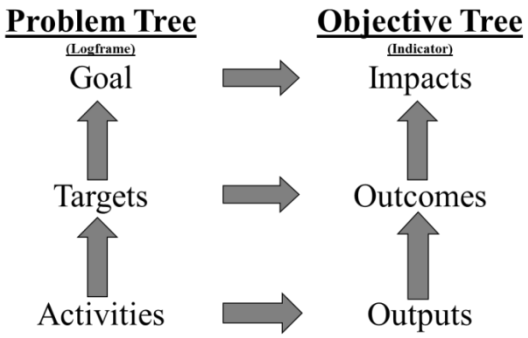
There are different levels of problems:

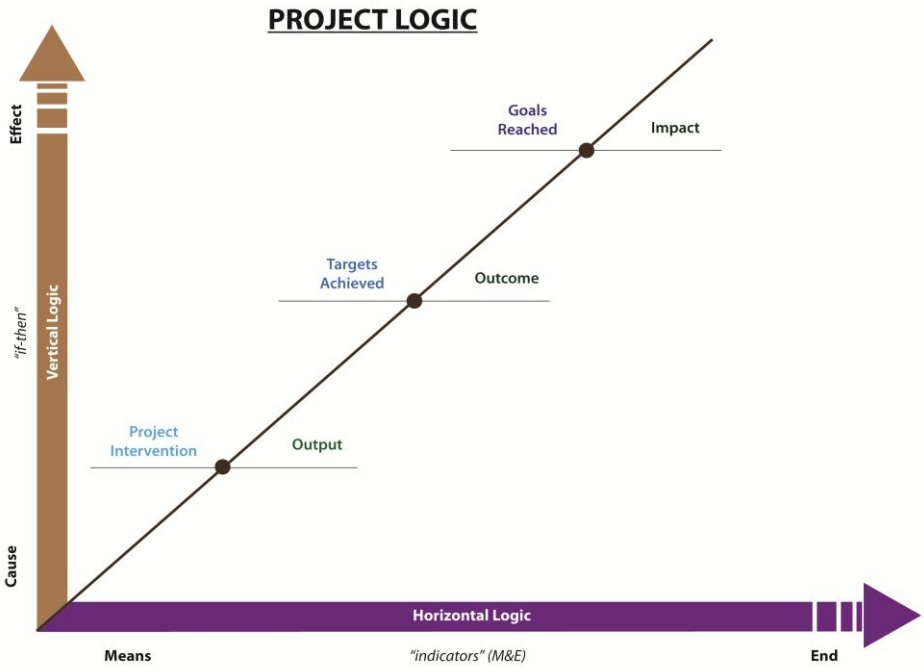
- Overall Objective (Goal)
  - ❑ Produce impact – projects contribution to the beneficiaries
- Specific Objective (Target, Purpose)
  - ❑ Produce outcome - benefit to the target group
- Component Objective (Results level)
  - ❑ Produce outputs or results – tangible products or services delivered by the project

- Activities/Project intervention

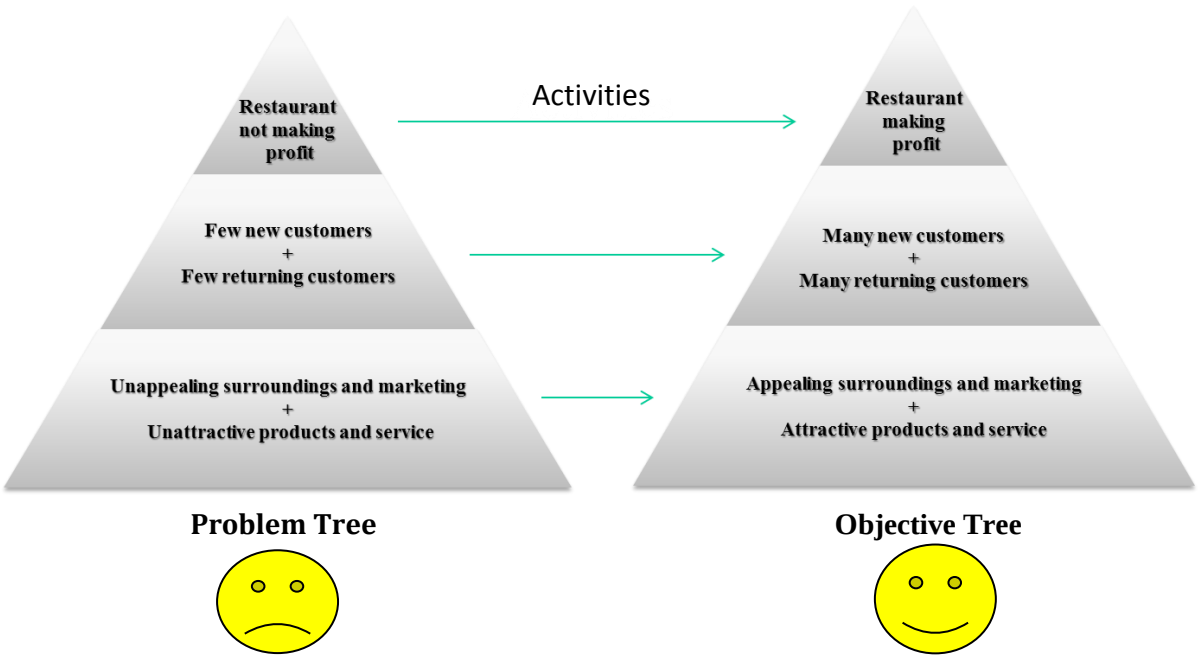
  - ❑ Address the cause of the problem

Why a Problem Tree?

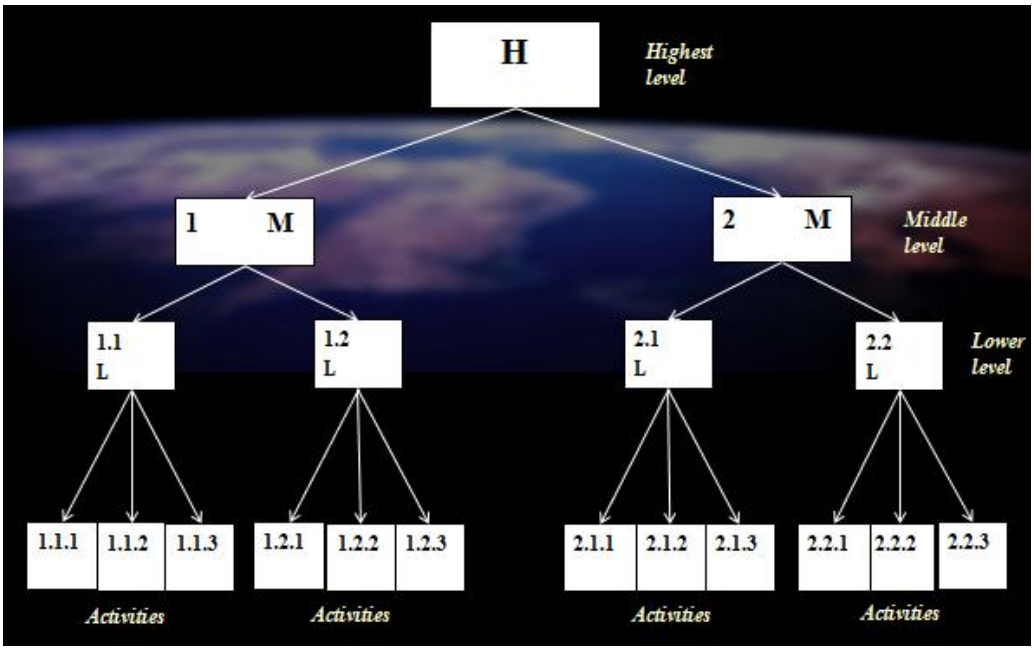


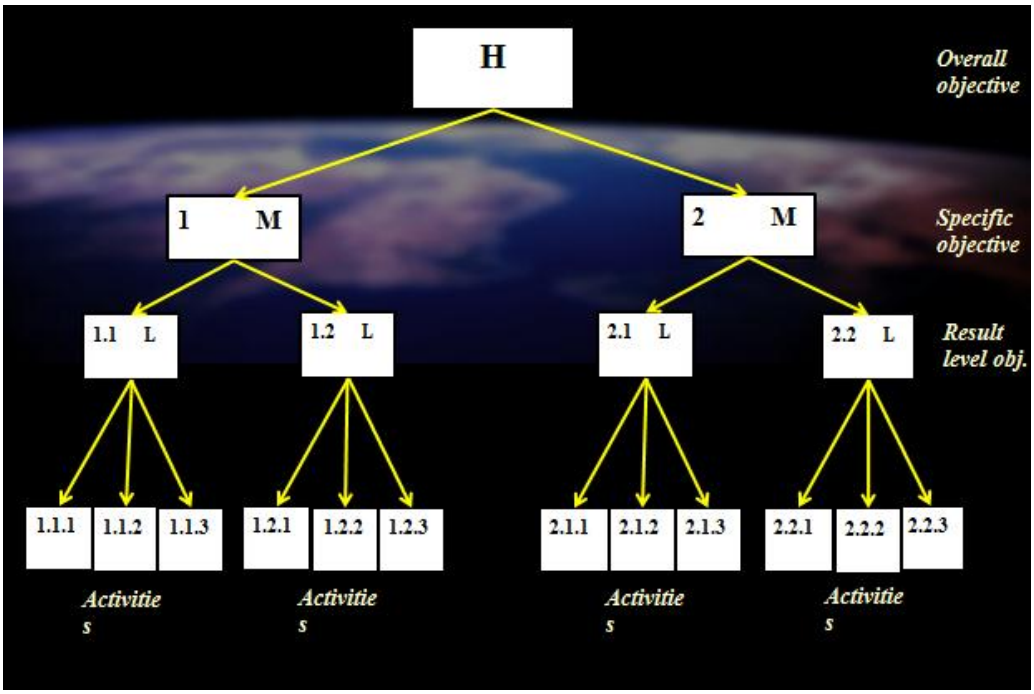


Logical Framework Analysis



3. Objective Analysis





4. Strategy Analysis

5. Logframe Development

Logframe (Logical Framework Matrix)*

Narrative	Intervention Logic	Objectively Verifiable Indicators (OVI)	Source of Verification (SOV)	Assumption(s) (Pre-conditions)
Overall Objective/s (Goals) Produce impacts - (Contribution of beneficiaries)	Make the restaurant profitable	Measures of achievement of overall objective		
Activities (Project intervention) - (Address the cause of the problem)	1.1.1 Ensure an inviting exterior 1.1.2 Make the interior design and settings modern 1.1.3 Manage waste sustainably and keep the place clean 1.2.1 Newspaper, TV ads and social media 1.2.2 Target tourists through travel agents and hotels 1.2.3 Put up posters, sign boards and bill boards 2.1.1 Find an operating nexus 2.1.2 Provide in-service training for chef and staff 2.1.3 Source quality ingredients 2.2.1 Improve food presentation 2.2.2 Train staff to be energetic, proactive and polite 2.2.3 Always provide quality products at attractive price; satisfied customer the best advt.	Measures of achievement of activities		Assumptions affecting linkages between Activities & Results Objectives

***Note:** It is the 'Objective Tree' that is used to develop the logframe. The 'Activities' will normally be part of OT but in this case it is simply not shown in the triangles.

KK021015

Logframe

Narrative	Intervention logic	Objective Verifiable Indicators (OVI)	Source of Verifications (SOV)	Assumptions
Overall Objectives	The description of the project according to its hierarchy of objectives	Measures of achievement of overall objectives	Sources of information & methods used to verify achievements	
Specific Objectives		Measures of achievement of specific objectives		Assumptions affecting linkages between Specific & Overall Objectives
Results Level		Measures of achievement of results		Assumptions affecting linkages between Results & Specific Objectives
Activities		Implementation/targets of activities		Assumptions affecting linkages between Activities & Results Objectives
			PRE-CONDITION	Objectives which are not included yet have effects on the project

6. Activity Schedule

No.	Activities	Responsible	Year *Planning for a five-year period: Jan Feb Mar Apr May Jun Jul Aug Sept Oct Nov Dec
	List of activities from the logframe	Name of the person assigned to carry out the task	Milestones (a critical decision point before moving to the next stage)

Phase 2 - Planning Phase

7. Resource Schedule- The budget

No.	Activities	Unit	Quantity	Cost/Unit (RM)	Funding Source	Recurrent Cost	Total (RM)
	List of activities from the activity schedule	Types of unit e.g. package, pax, etc.	E.g. number of package, pax, etc	E.g. cost per package, cost per pax, etc.	Source of fund to carry out activities which includes self funding if possible	Repetitions in activities	Total cost for each activity
						TOTAL	

Phase 3- Implementation Phase

8. Project level activities

All phases- Implementation

9. Monitoring & Evaluation- Use Indicators

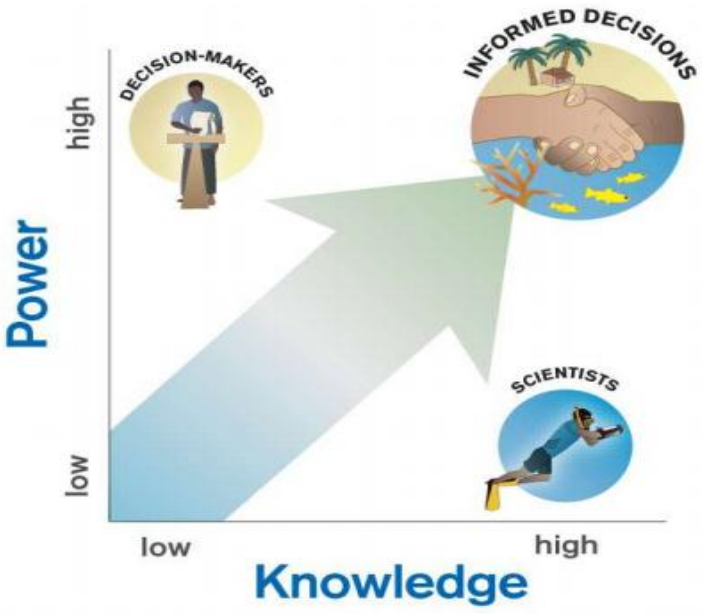
Science-Policy Relevance

- Scientists to Decision makers
- Decision makers to Scientists

- Science for policy and Policy for Science

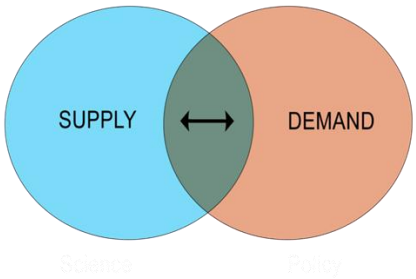
- Science based policy, Policy based Science

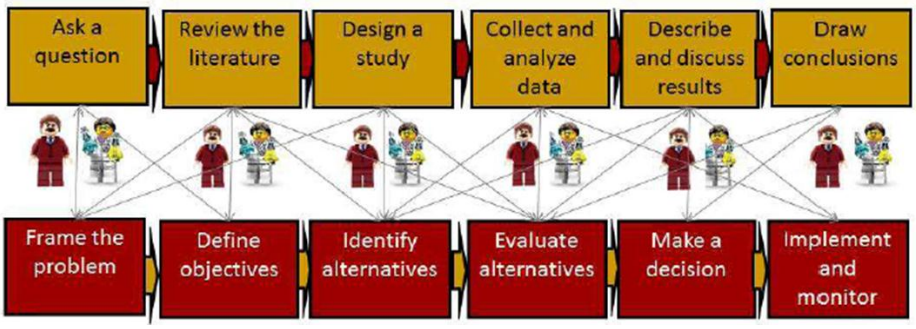
Science-Policy Dialogue



Source: Karrer L, *et al.* (2011) Science-to-Action Guidebook. Science and Knowledge Division, Conservation International, Arlington, Virginia, USA. www.science2action.org

Science-Policy Interface





WORLD CAFE OVERVIEW

by **Prof. Kanayathu Chacko Koshy**

World Café Discussion Method

Cycle 1- Round 1

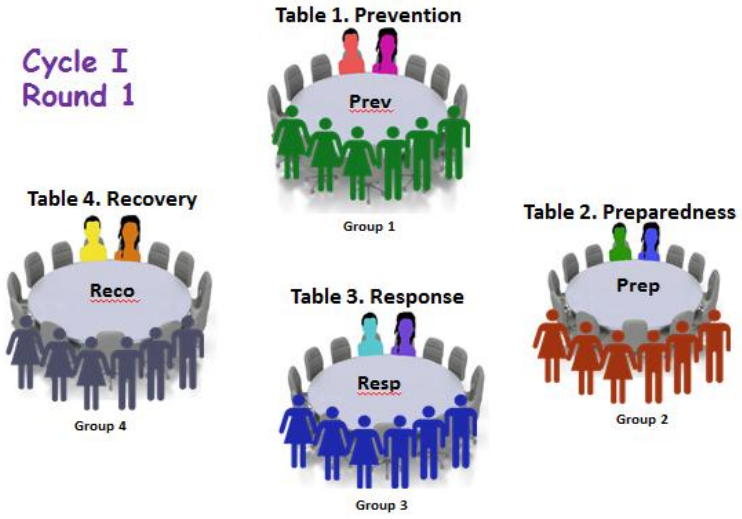
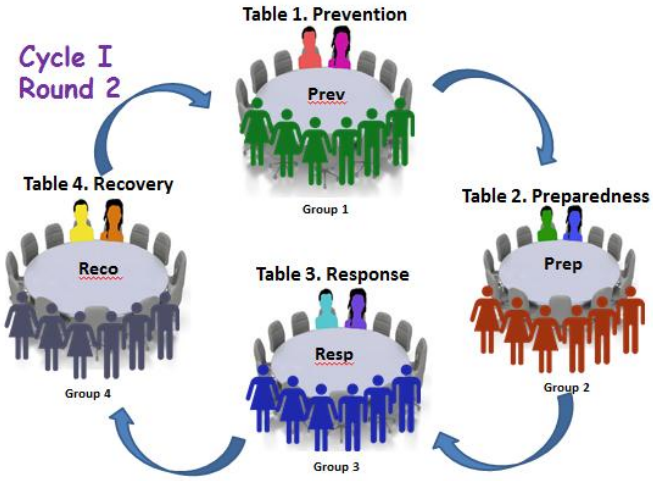


Table arrangement for World Café- The facilitator (host) and the scribe (recorder) will stay put at the same Table always. The group members will discuss the 'table topic' for a preset period (cycle 1, round 1). A guide sheet containing sub-topics, to help focus on the topic of discussion will be available. Then, when the bell rings, the group will move clockwise to the next Table and discuss the new 'table topic' for another per-set period (cycle 1, round 2). Then they move again, as before, for round 3 and round 4. At the end of the allocated time, each group would have completed discussion on all four table topics; i.e. (2P, 2R) + 1, the 1 being Governance which is common to all and will be discussed on all tables. The end result is that everyone would have had a chance to contribute to the discussion on all DRM-SD topics. The Facilitator and Scribe will present the summary of the discussion to the plenary on Day 3 after any refinement following the Case study presentations in the morning. The final summary of all discussion will be sent to the participants as a post-workshop present!

This can be used in different ways by many stakeholders to reduce loss and damage associated with future floods and to make the community and nation resilient towards flood hazards. A similar approach could be used to address any other hazard, including sustainability challenges such as poverty, climate change, green growth etc. and hence the abbreviation, DRM-SD.

Duration for discussion: 60 minutes. Try to complete all you want to discuss within this time. Remember to stay focused only on the topic meant for the Table you are part of. You will get a chance to discuss other topics as you move to neighbouring tables.

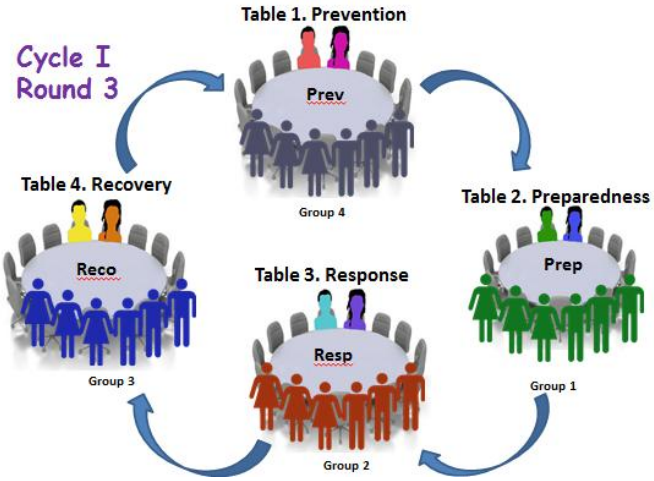
Cycle 1- Round 2



During this round, the discussion time is only 40 minutes. This is because a 1 hour discussion has already taken place and the ideas have all been recorded. You could pick up from where the previous group left, sort of. This way you can fill gaps and add value to what has already been discussed.

Duration for discussion: 40 minutes.

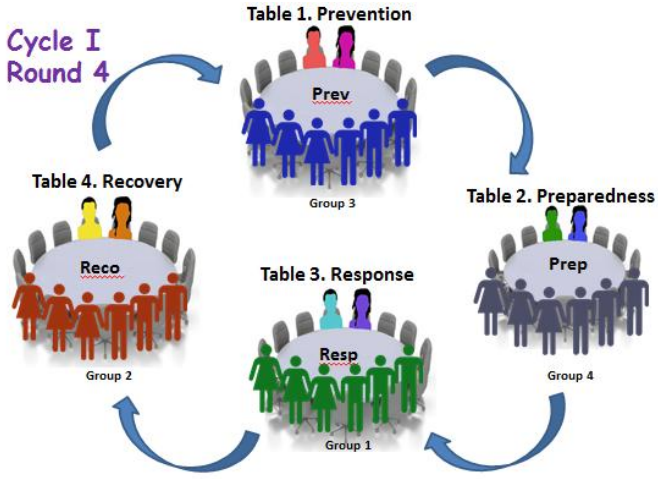
Cycle 1 Round 3



Follows exactly the same logic and order as in Round 2.

Duration for discussion: 40 minutes.

Cycle 1 Round 4



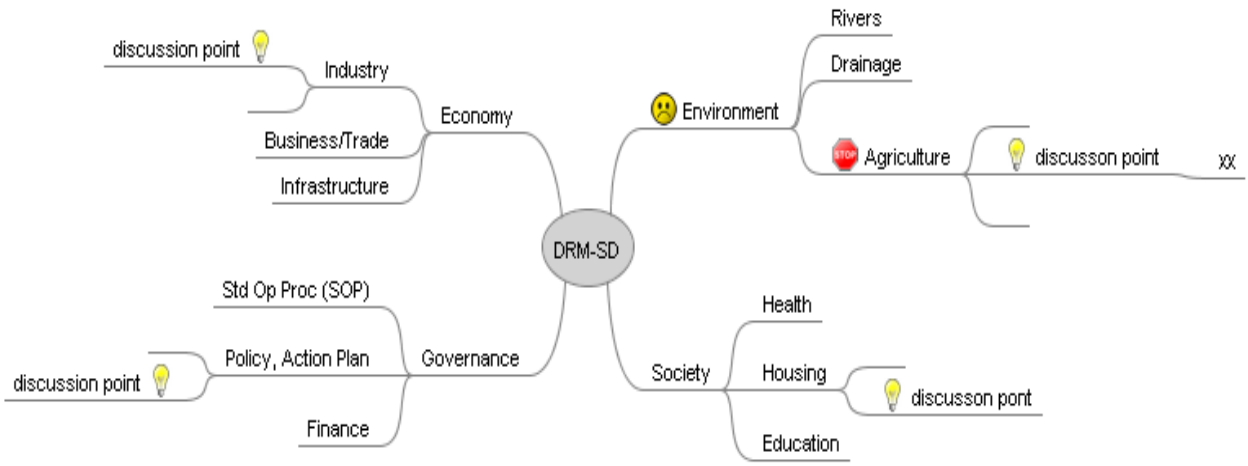
Round 4 would be the last and final round. Move exactly as before to the new table.

Duration for discussion- 40 minutes.

At the end, as you conclude the discussion, you complete one cycle. Technically, you can go for another Cycle if you have more things to discuss. But in our case we will stop with Cycle 1.

Mind Maps

Mind Mapping for Stakeholder Discussion



DAY 3

MALAYSIA EXPERIENCE-

FLOOD DISASTER KUALA NERANG, KEDAH MALAYSIA

by **Dr Suzyrman Sibly**

Background

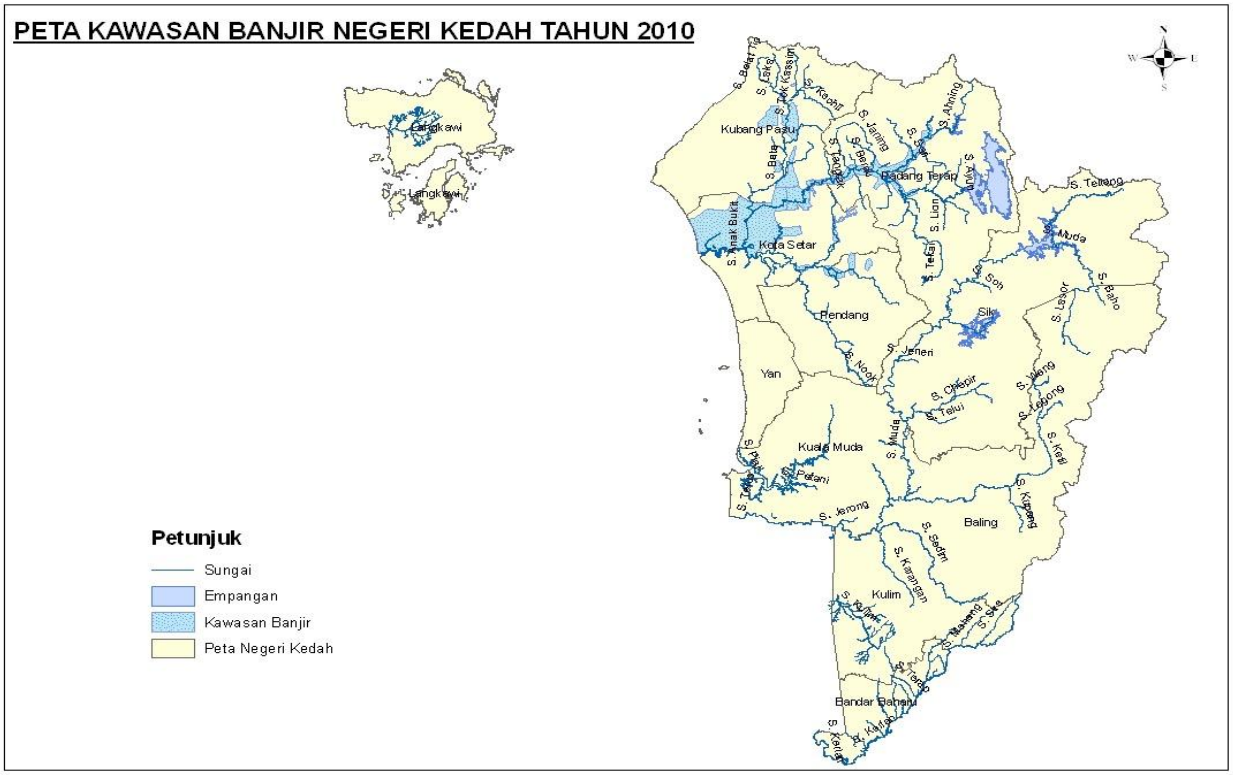
- Severe flood in Padang Terap District, Kedah
- 2000, 2005, 2006, 2007, 2008, 2009, 2010
- Number of flood victims 1,500 (Estimated data from District office)
- Padang Terap - Remote and Isolated area
- Flood Management - addresses flood only during flood event
- Cost of flood - RM7 million (USD1.8 mil) for Padang Terap District, RM17 million for Kedah (USD4.4 mil)
- 11 sub districts affected
- Flood duration 3 - 6 days. Average depth of flood water is 4 feet deep
- Average losses increasing (estimated data from district office)

  2000 - RM1100 per household

  2005 - RM1500 per household

  2010 - RM2400 per household

Flood Area



Flood in Kedah

Focus Group Discussions

Survey

Assistance

Capacity Building

Boat Training

Findings & Recommendations

- Urgent needs:
    - Rescue boats + Engine
    - Tents, cooking utensils, electricity generators for emergency flood relief centres, electric water jet spray
    - Floodkits
- Intermediate needs:
    - Manpower needs to be built up through capacity building & training
        - Flood disaster management
        - Rescue boat handling
- Long term needs
    - Flood disaster awareness campaign in schools
    - Disaster adaptation

LAO PDR EXPERIENCE-

SHARING EXPERIENCES OF DISASTER RISK FINANCING:

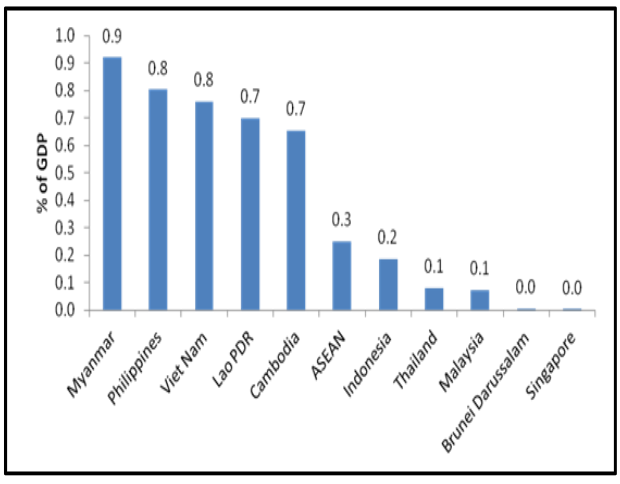
STATE RESERVE FUND (SRF) IN LAO PDR

by **Saychai Lithchana**

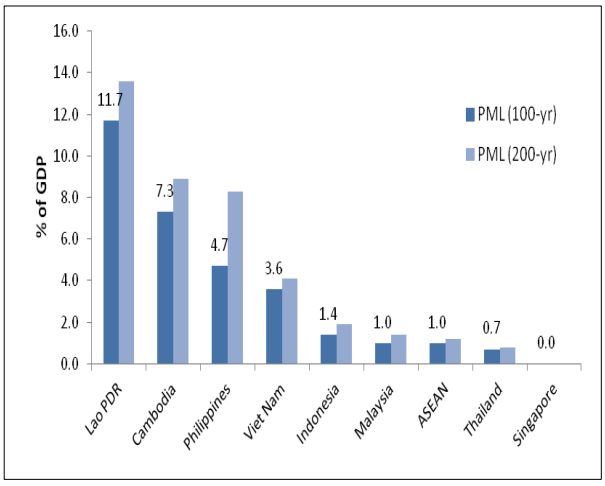
Lao PDR is one of the ASEAN countries most affected by natural disasters as % of GDP (preliminary analysis).

- In 2011, Typhoon Haima and Tropical Storm Nok-Ten caused damages of US$66 million and US$71.9 million, respectively.
- In 2009, Typhoon Ketsana resulted in estimated damages and losses of US$58 million.

Estimated Annual Expected Losses (AEL) as a percentage of national GDP

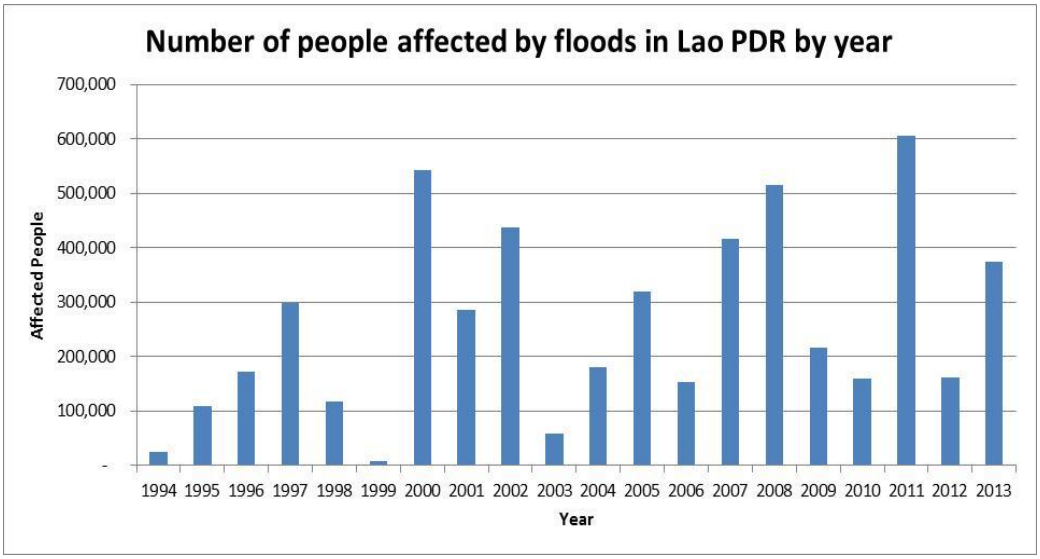


Estimated 100-year loss and 200-year Probable Maximum Loss (PML), as percentage of national GDP.



Source: World Bank (2012)

Floods are a major disaster risk in Lao PDR.



Average annual number of people affected: 258,000.

* Primary data source for 2001-2013 is the National Disaster Management Office Database (with some limitations). Data scaled to account for national population growth.

Establishing the State Reserve Fund – Motivation

- Dedicated source of funds to be used for responding to natural disasters (to improve government financial planning)
- SRF accrues resources to smooth government expenditure when large scale events occur
- Opportunity to consolidate existing/ planned disaster funds in Lao PDR (to increase efficiency of fund management and expenditures)

State Reserve Department (SRD)

- Technical department under the Ministry of Finance, established September 2012 (MoF Decision No.2429)

- Main role to manage operation and use of the State Reserve Fund (SRF)
- Acts as Secretariat to the Minister of Finance for administering the State Reserve Fund

SRF Legal Framework

- Law on State Budget (2006)
  - Annual budget allocation to SRF
- PM Decree on State Reserves No. 291 (Nov 2013)
  - Key legislation for establishment and management of SRF
- PM Decision on the Implementation of State Reserves No.76 (2014)
  - Responsibilities of line ministries for managing SRF goods reserves
- Implementation Guidelines for the Decree on State Reserves, MOF (draft, 2015)

SRF Operational Framework – Developing SOPs

- **Aim of Standard Operating Procedures (SOPs)**
  - To document work processes for government staff to adopt and use as rules to operate the SRF
  - To enable timely access to funds following a disaster, and minimise economic and social impact
- **Method for Developing SOPs**
  - Developed with technical assistance from World Bank
  - Review of international experiences operating disaster reserve funds

– Consultations held with other government departments and international organisations in Lao PDR

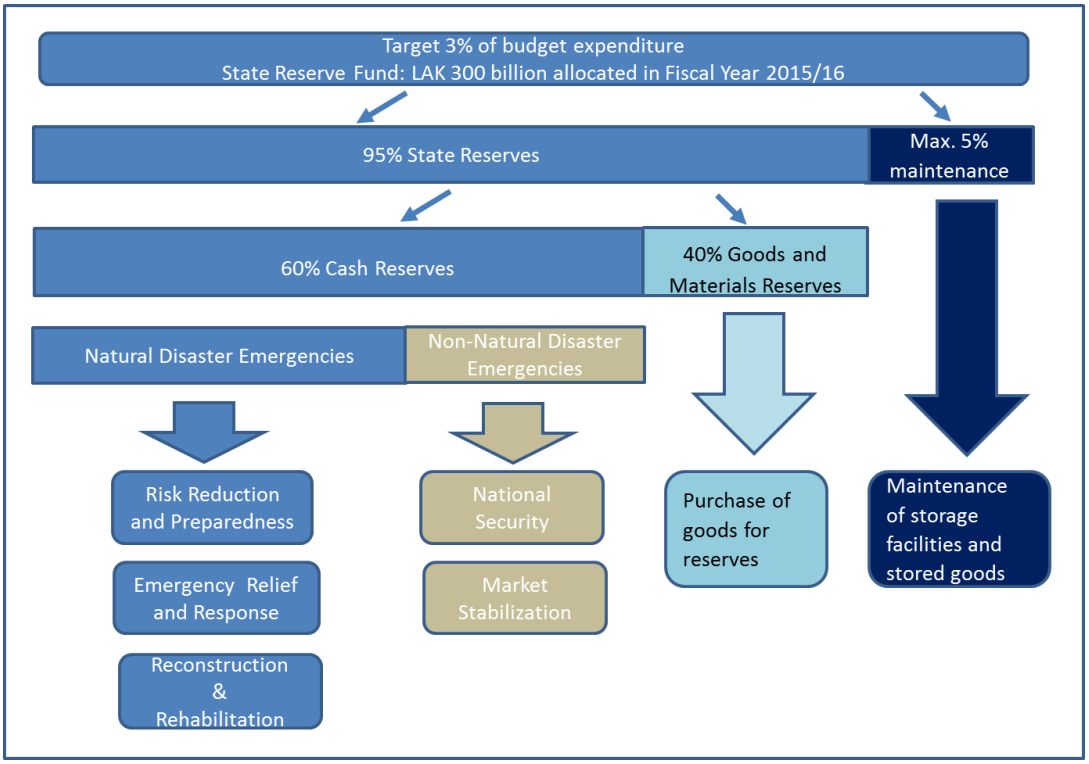
Scope of Use of SRF

"Responding to urgent and emergency needs to prevent, fight and rehabilitate impacts of disasters as well as to contribute to market adjustment, to national defence and to public security…"

(Decree on State Reserves no. 291/GOV)

- SOPs focus on disaster related use of funds:
  i. **Risk Reduction and Preparedness** (e.g. strengthening public buildings, information for public awareness and education)
  ii. **Emergency Relief** (e.g. evacuation/rescue operations, medical supplies, food and water for those affected)
  iii. **Rehabilitation and reconstruction** (e.g. repair of damaged assets; roads, bridges, public buildings, agriculture sector, etc)
- Target allocation for each expenditure type
- Key department recipients of SRF identified
- Non-disaster emergency uses – national security and market stabilisation

Structure of State Reserve Fund



SRD can propose a change to the 60:40 ratio in annual budget plan.

Source of Funds

Main Sources:

i. Annual State Budget allocation; target 3% of budget expenditure

ii. Balance of annual budget expenditure or budget surplus

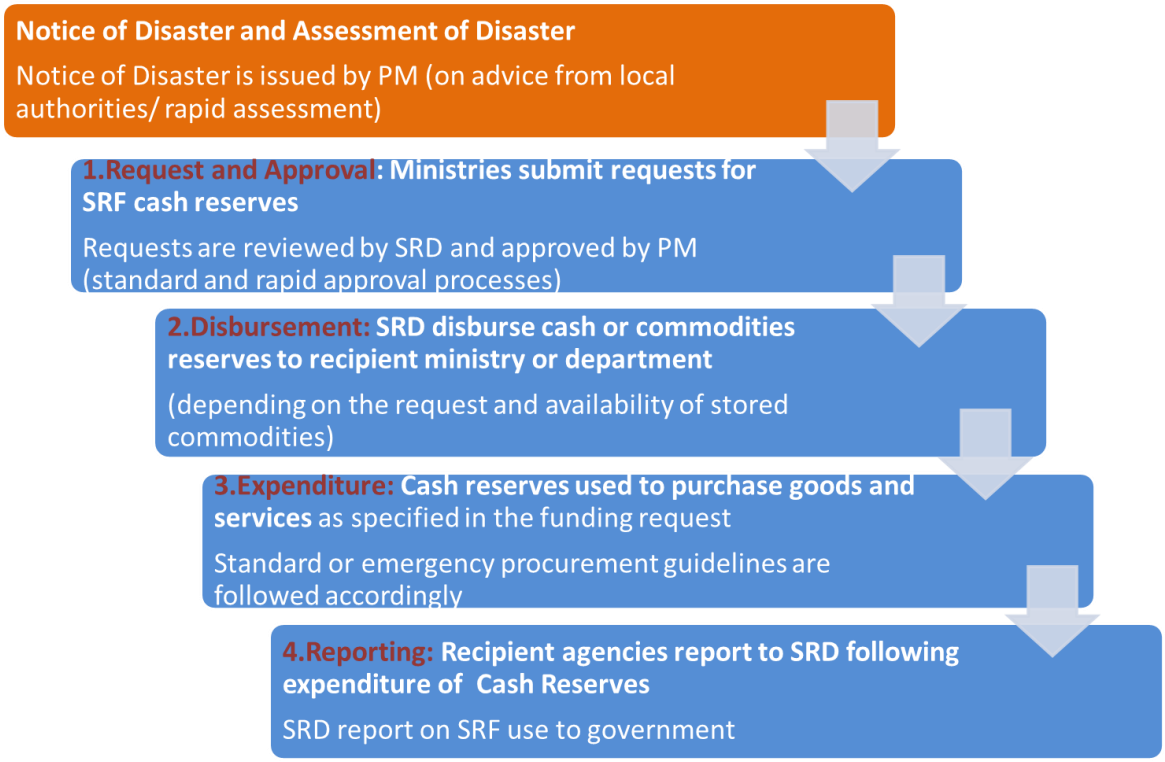
iii. Other sources

– natural resource sales revenue, interest earned on SRF, contribution from individuals or organisations

- FY 2014/15: budget allocation of **LAK 300 bn (US$ 37 million)** (1% of budget expenditure). LAK 130 bn (US$ 16 million) transferred to account. The 3% target

appears to be too high given other State Budget expenditure needs. LAK 300bn or 1% of budget expenditure appears to be a more realistic target.

Process For Withdrawal



No official 'declaration of disaster'. Focus on the fact that there are 4 stages for request process - these will be explained in the subsequent 3 slides in more depth.

Approval Process

Two separate approval processes developed:

A. Standard Approval Process

- For preparedness and reconstruction expenditures
- Detailed review of requests, reconstruction requires post disaster needs assessment, etc

B. Rapid Approval Process

- For emergency relief expenditures
- Streamlined process; less steps and documents required
- Requires notice of disaster, and letter of request to PM

- Emergency relief, and reconstruction; trigged by disaster notice. Preparedness any time.

- For Rapid Approval process, documents required are; i) Notice of Disaster from PM and ii) Letter of Approval from PM.

- We've developed a single letter to be sent to PM with dept state reserves cc'd to try and keep things moving as quickly as possible. This will then be signed and returned to requesting dept with DSR cc'd. 2 steps rather than 4.

Disbursement and Expenditure Guidelines

- Following PM approval, funds disbursed by SRD from SRF account at National Treasury to recipient
- Existing government procurement laws and guidelines to be used for SRF expenditures
- Emergency procurement guidelines to be used for SRF emergency relief expenditures
- Emergency procurement implemented by MOF or ministry responsible for storage of goods

Reporting, Monitoring, and Accountability

i) Recipient agencies' reporting requirements

- Use of existing reporting channels and requirements for expenditure of State Reserve Funds (to avoid duplication)
- E.g. principles to follow Accounting Law

ii) SRD's reporting requirements

- Reporting on accumulation and disbursement of State Reserve Funds
- Use of SRF expenditure codes for recording expenditure
- External audits or reviews of SRF, e.g. by State Audit Organisation, Internal Inspection Authority

Technical Working Group

Role of Proposed Technical Working Group:

- Inter-ministerial coordination to support SRF operation, including review of requests and making recommendations for approval

**Yet to be established.*

Role of TWG to include: review of proposals submitted by relevant ministries (e.g. for reconstruction) and provide recommendations for authorisations by the Minister/ Prime Minister, and participate in the monitoring and accountability process.

The Disaster Risk Financing instruments are available in Laos. The currently finance the costs imposed by disaster in Laos as

- StatE Reserve Fund (SRD, MoF) = 300 Billion kip

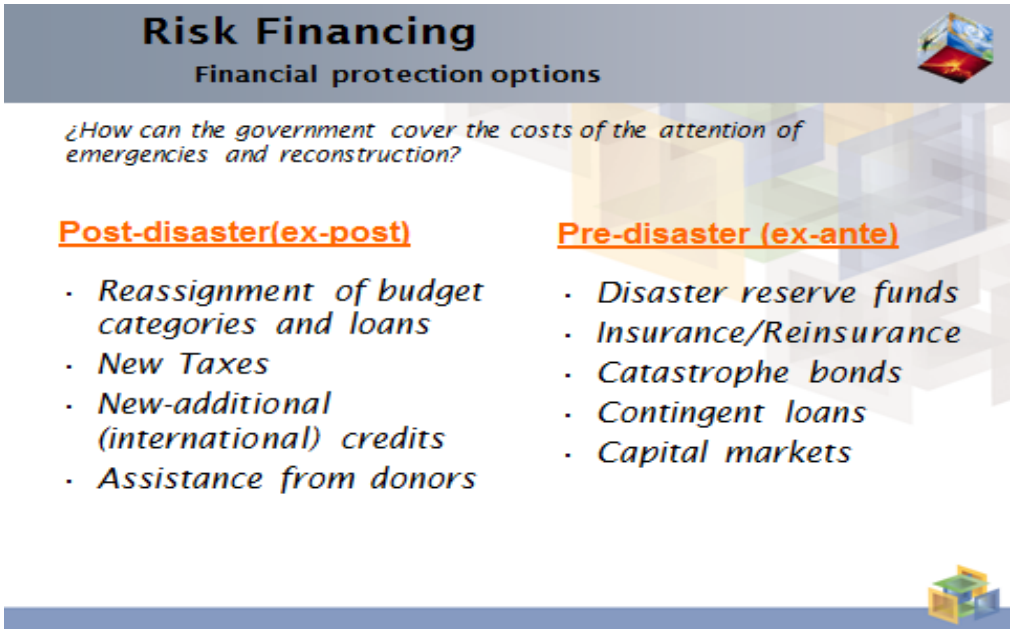
- National Contingency Fund

(Budget Department, MoF) = 100 Billion kip

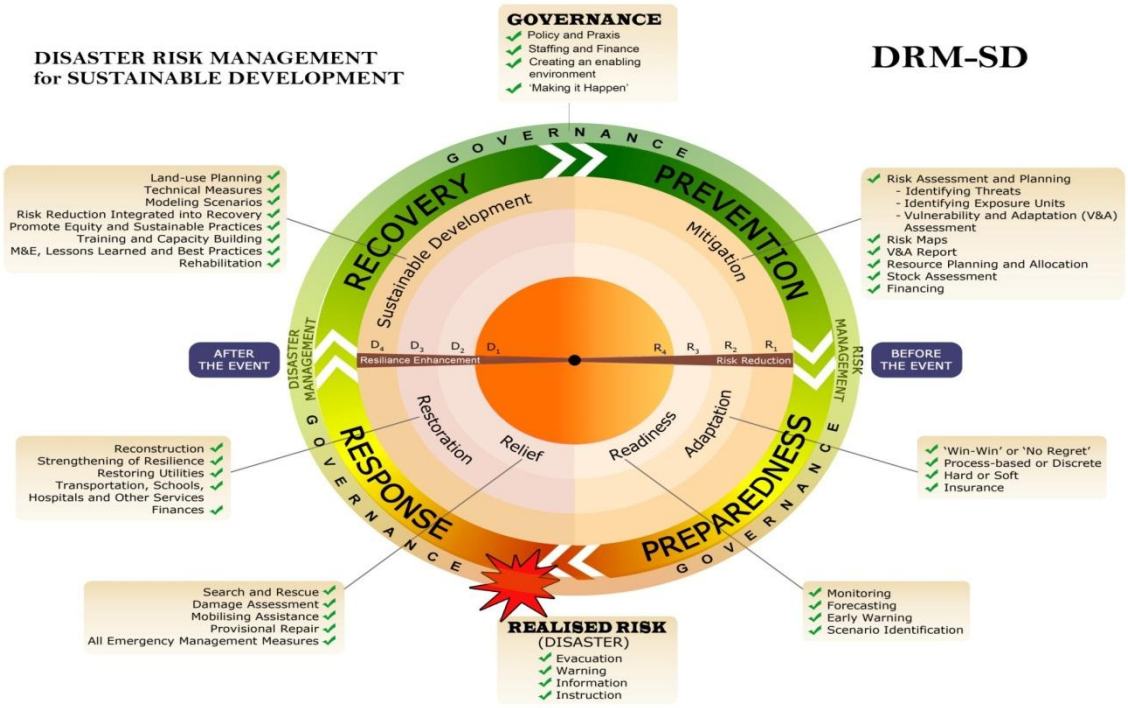
- Social Welfare Fund (MLSW) = 0.5 Billion kip

- Road Maintenance Fund (MPWT) = 400 Billion kip (includes non-disaster uses)

- Provincial Emergency Fund (e.g. Xayaboury, Salavan Provinces) = 0.1 Billion kip



The Disaster Risk Management Model for SD from CGSS



Source: USM Global Center for Sustainability Studies, 2013

Challenges

- SRD is a relatively new department, and is still gaining experience on managing the SRF
- The full amount of the budget allocation has not been transferred to the SRF account for FY 2014-15 (received approx. 43% of budget allocation)
- Budget Department (MOF) is still the primary source of funds for post disaster expenditure needs, from the National Contingency Fund
- Disaster Management Law is not yet available
- The new structure for National Disaster Prevention Control Committee (NDPCC) it was not clear about the role and responsibility

- Disaster Planning Template in the national level is not yet available
- Limited the capacity of government staff for Post Disaster Need Assessment (PDNA)
- Lao PDR is lack fund for disaster risk management.

Next Steps

- **Hold consultation workshop on draft SOPs** with other key government agencies and I/NGOs – for further input, and to coordinate with use of other funds (e.g. contingency fund etc.)
- **Coordinate with Budget Department** to ensure planned budget allocation to SRF is realised
- **Capacity and training needs assessment for SRD staff** – to feed into SRD training plan
- **Hold dissemination workshop to increase awareness of SRF**, and how funding can be easily accessed by line ministries for disaster response and recovery
- **Explore linkages of SRF with regional catastrophe risk pooling mechanism**

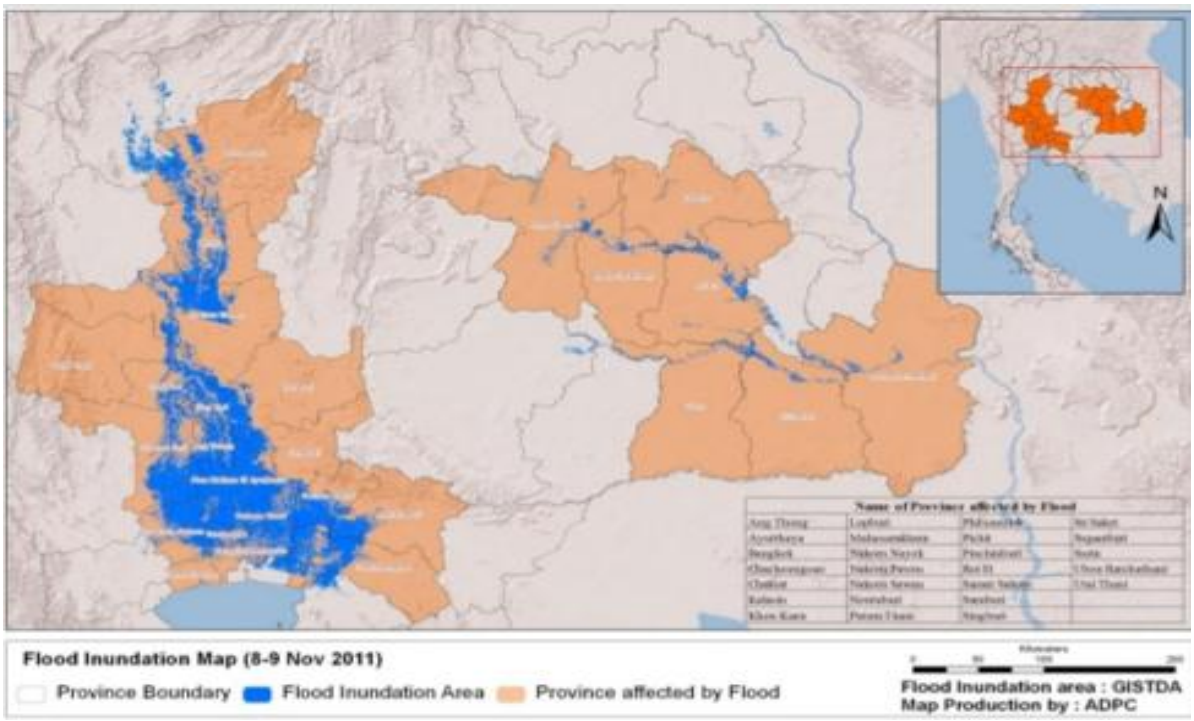
THAILAND EXPERIENCE:

PRE-DISASTER : DISCUSSION ON SE ASIAN CLIMATE, RISK MANAGEMENT – PRE DISASTER STAGE: PREVENTION & PREPAREDNESS (A CASE FOR SYSTEMS THINKING)

by **Robert Steele**

- Five storms hit Thailand in 2011causing the great flood on more than ¾ of the country.
- Bangkok, was flooded heavily in late November and December 2011
- For 2 months, Thai society learned an unforgettable experience and meaning of ‘disaster’.
- Urban areas were not the first flood protection priority. Which area did the government want to protect most?

Geographical Extent of the Flood



The Global Impact

- The World Bank ranked the 2011 Floods of Thailand as the 4th costliest disaster in the history, after the 2011 earthquake and tsunami in Japan, the 1995 Kobe earthquake, and 2005 Hurricane Katrina.
- The flood also interrupted the global supply chain of automobile and electronic industries in Japan and Europe.

The Flood waters covered vast areas.

Including World Heritage **monuments**.

Industrial Estates.

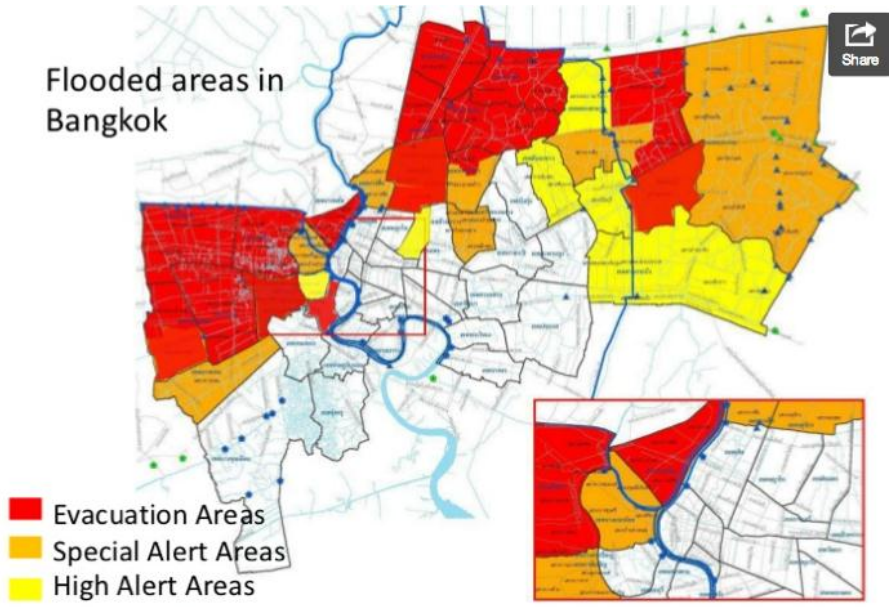
7 Industrial Estates
838 Factories
1,055 New Cars
1 Million workers lost their jobs
temporary or permanently

Residential Neighborhoods.

Transportation hit hard.

Don Muang Airport and Head Office of Royal Thai Airforce were fully under water for over a month

Rescue and response… many people had to do it themselves …. Thai resourcefulness.



Thai Floods—Natural Factors & other Causes

A. heavy rainfall continuing longer than other years;

B. the duration of inundation was prolonged due to the structure of the rivers, such as the moderate slope of the Chao Phraya River and the low flow capacity of the downstream channel; and

C. the inundated industrial estates were originally located in low marsh areas

Five major Tropical Storms (Typhoons) July – Oct 2011

Flood Severity Contributing Factors

- Global Warming
- Climate and Topography - Excessive rainfall / Basin subsidence
- Duration of inundation was prolonged due to the structure of the rivers and the low flow capacity of the downstream channel;
- Rapid and mostly unregulated urbanization
- Insufficient and poorly maintained drainage and flood protection systems
- Insufficient flood prediction system
- Poor flood warning and communication system,
- No single flood management command system/body
- Uncoordinated water management by Key Agencies
- Political intervention in dam operation and irrigation management Poor communication with key stakeholders

- Unsystematic emergency mismanagement & rescue efforts,
- Majority of the people in Thailand lack sufficient awareness, knowledge about disasters,
- Not very much serious interest in learning how to prevent or respond to them (culture of mai pen rai attitude).

Impacts of Flood Damage

Social & Economic Impacts

- During …. Food and water hording
- Conflict and fighting among adjacent communities (because of mistrust and misinformation from government flood communication
- US$45 billion in damages and losses to properties, industrial plants, goods and services
- Schools, 1,053 were affected and were forced to end the term early. 5 million people, or 1.9 million households were effected
- 758 deaths, mostly from drowning and electrocution
- Siginificant increase in burgularies of evacuated houses… no police force or security to patrol
- Reduction in tourist numbers and closure of tourism businesses
- *Reduction of total household expenditures by 5.7% to 14%.*

Banking Sector

- 451 branches of banks were closed, thus affecting people's ability to withdrawal and have cash on hand

- 4,942 ATM's were damaged and more were unserviceable for some time

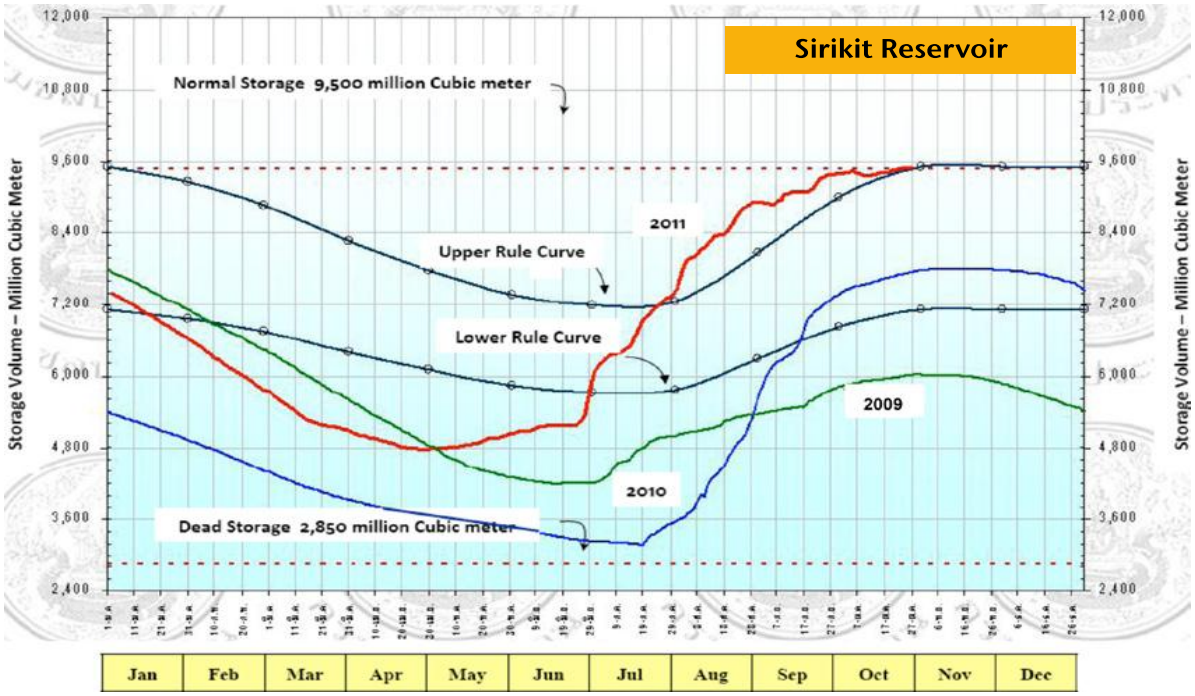
Business & Industrial Impacts

- 7 industrial estates flooded
- Over 1,000 factories, including major manufacturers such as Sony, Canon, Nikon, Honda with long-term impacts on exports
- 1.055 new cars, plus over 25,000 cars and trucks severely damaged by water
- 1 million workers lost their jobs temporarily or permanently.
- The damage to the industrial sector was particularly devastating. According to the estimates released by the UNISDR Secretariat (2012b), the event set back global industrial production by around 2.5%.
- Decrease in investor confidence in Thailand as a low risk place for locating manufacturing industries.

Government Policy and Infrastructure

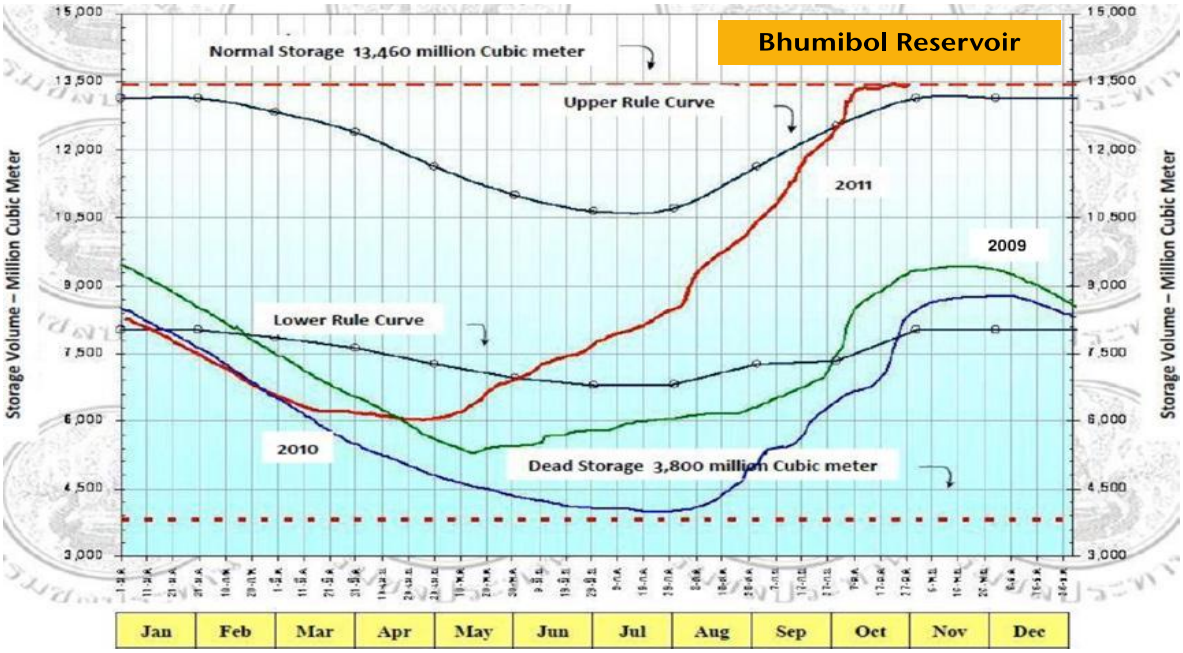
- US$11 Billion Water Management Budget and Plan passed (water diversion plan)
- Construction by central government, BMA, and local authorities of flood walls along waterways (not coordinated)
- Cleaning, deepening and widening of canals

Water Management Profile – Sirikit Reservoir



Source: Thailand's Royal Irrigation Department

Water Management Profile – Bhumibol Reservoir



Source: Thailand's Royal Irrigation Department

Concrete flood walls were built immediately after the ground was dry; 7m high and 80km long.

Nearby towns along the river developed higher concrete walls against the flood.

Meanwhile, Thai society is seeking for something as resilient and adaptive options living with water.

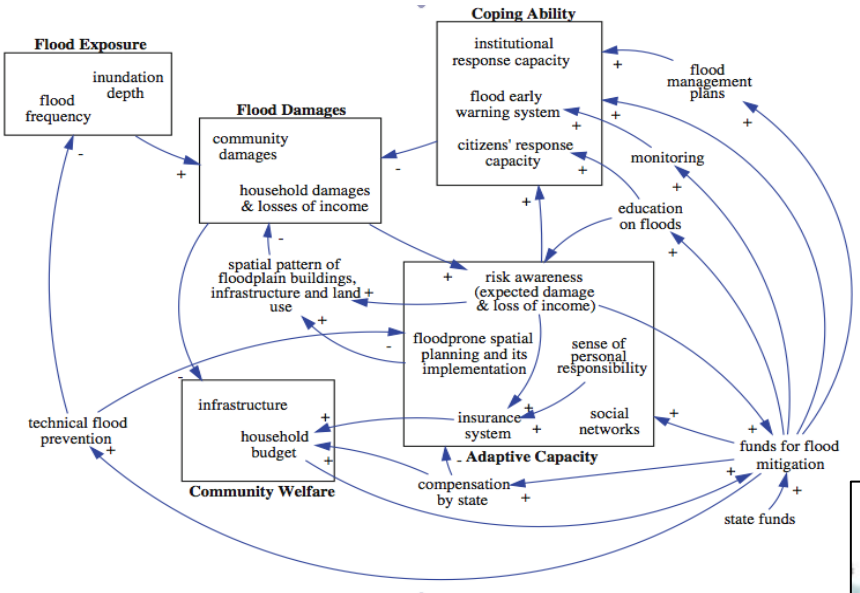
Thai traditional house on stilts is a good typical form of adaptive settlements.

Traditionally floating house is another form of adaption.

Case Study Discussion

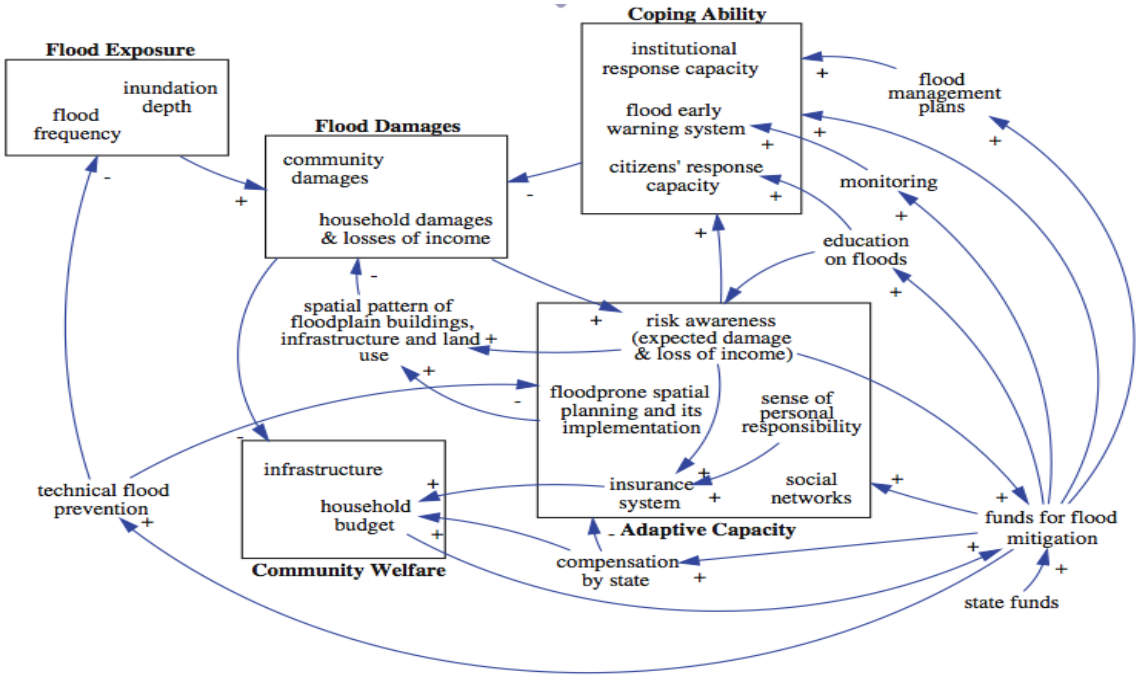
- What are the similarities and differences with the situation of flood prevention, mitigation, preparedness, response and recovery with Vietnam?

Example use of Causal Loop Systems Diagramming – flood preparedness



Group models developed for the Transcarpathian Tisa basin: the causal-loop-diagram (1) of a concept of flood preparedness that links coping ability (short-term measure in the case of a hazard event) and adaptive capacity (long-term preparedness). The pluses (?) and minuses (-) indicate the polarity that the relationship is assumed to have (thanks to Piotr Magnszweski for contributing to the model structuring).

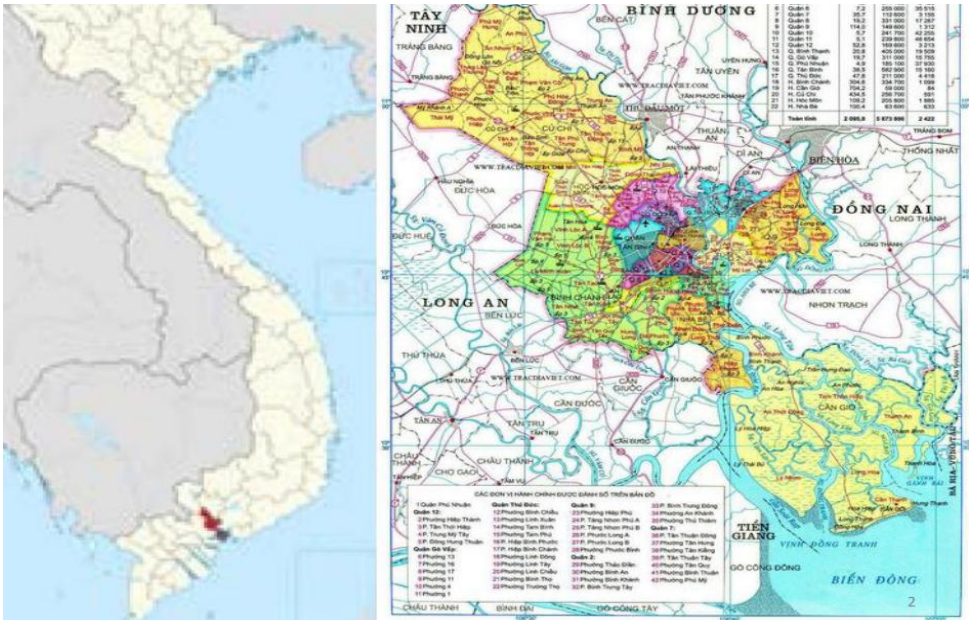
Identifying key Leverage Points for Intervention



VIETNAM EXPERIENCE-

FLOODING IN URBAN AREA – HO CHI MINH CITY,

VIETNAM: DISASTER RISK RESPONSE

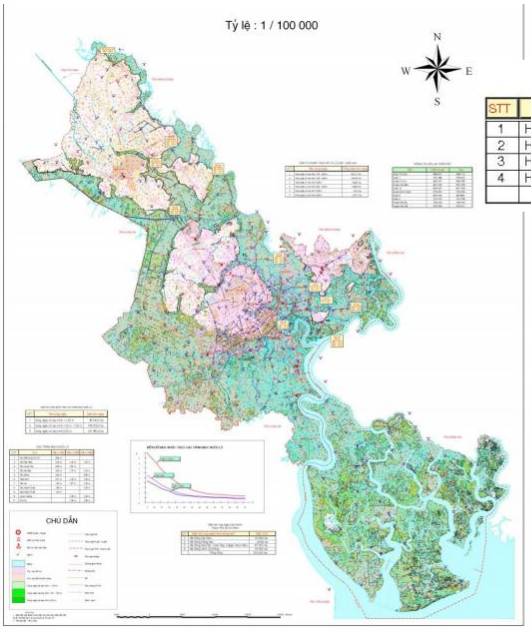


Phu My Hung, District 7

Urban slum along Nhieu Loc – Thi Nghe Canal

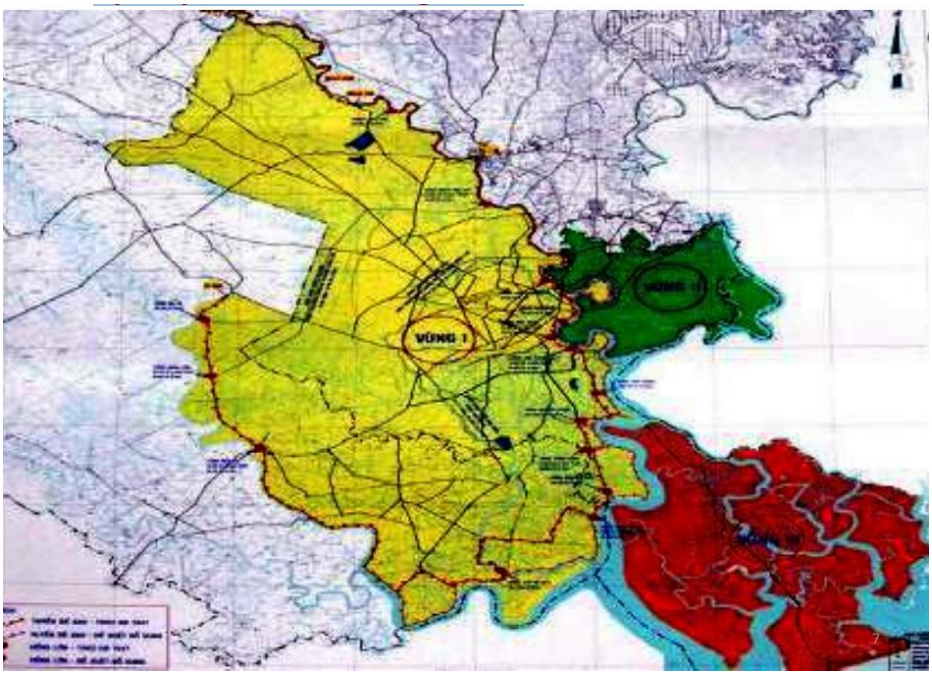
Source: ashui.com, by Ngụy Hà

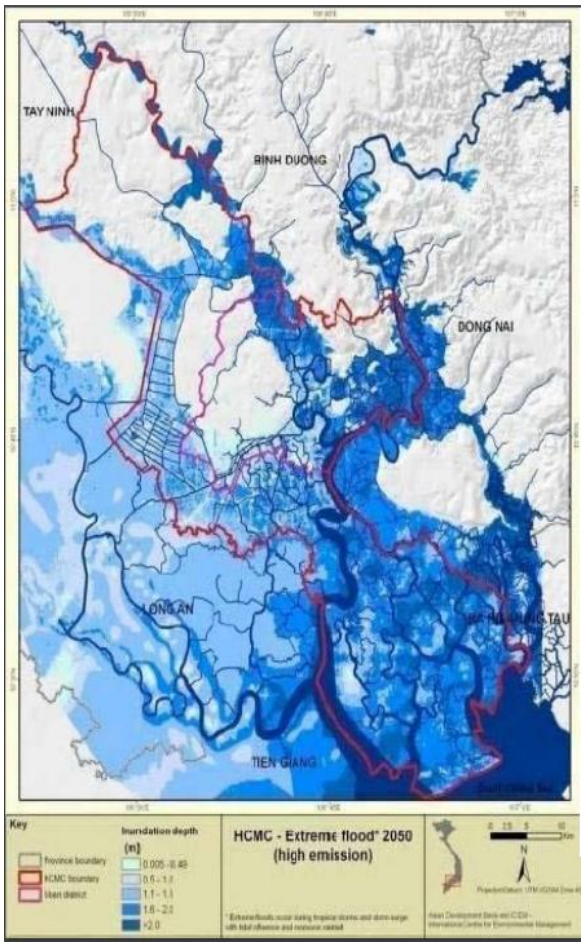
Flooding Map, HCMC

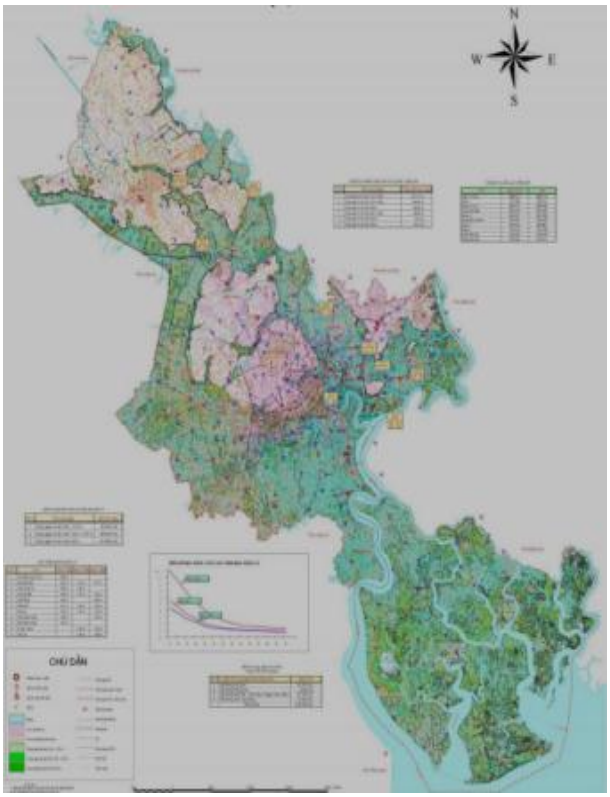


http://www.phongchonglutbaotphcm.gov.vn/?id=27&cid=312

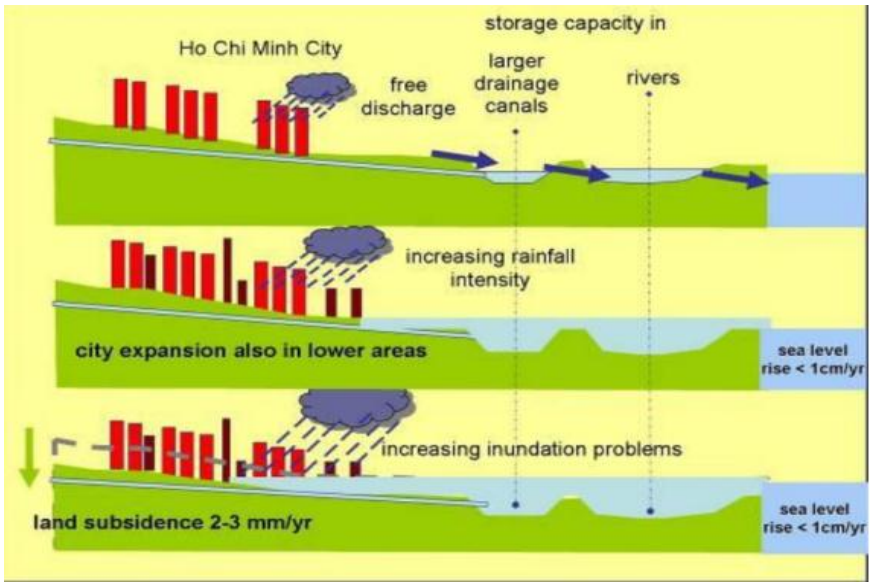
Dyke System Surrounding HCMC





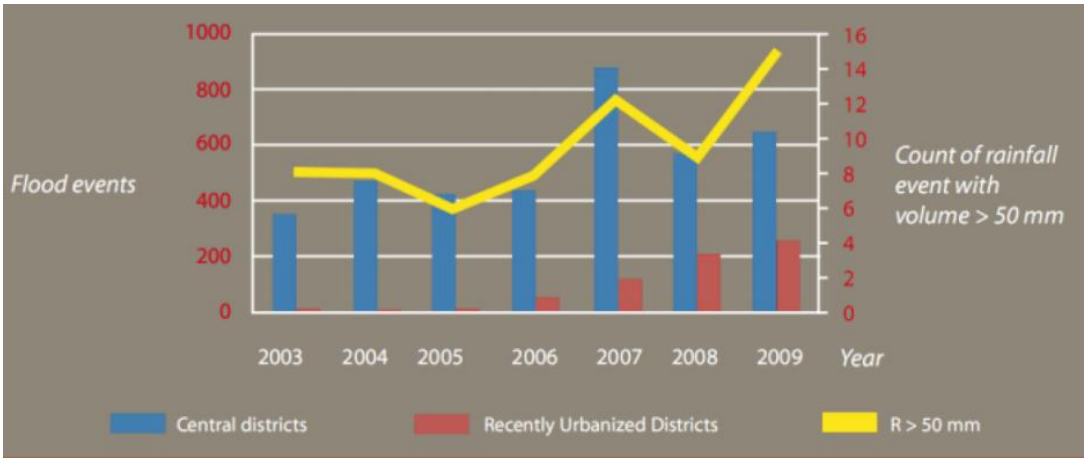


Ho Chi Minh City Inundation Problem



Source: Royal-Haskoning interim study report (2012)

Count of Flood Events in HCMC



Source: Philip Bubeck, Flood damage and risk assessment for Ho Chi Minh City

Drainage System

- The drainage system in HCMC is a combined drainage system for domestic wastewater, rain water and industrial wastewater.
- The drainage system in urban areas severely degraded, only meet 60% the drainage needs (TH Nhue, 2011).
- 50% damaged sewers, 30% degraded sewers, only about 20% of new sewers still good conditions
- The drainage system in the HCMC is “out of date” compare with the heavy rain and high tides (TH Nhue, 2011).

Reservoirs in Sai Gon –Dong Nai River Basin

Flood Damage

- Direct tangible **vs.** Direct intangible

- Indiret tangible **vs.** Indirect intangible

Flooding Situation in HCMC from 1999 to 2013

- From 1999 to now, water level increased significantly, from 1.22 m to 1.55 m.
- High tides on 3/2005 and 3/2006 broked the protective dykes and caused flooding in several districts in HCMC (inundation depth until 1.5 m).
- Specifically on 2013, water level in HCMC reached 1.64 m, 2 cm higher than highest water level in 2012 -> large damage.

Flooding in HCMC in 2013

Description

- At the end of October, November and beginning of December 2013, high tide in HCMC excess alarming level III, cause severe flooding in low lying areas, areas along canals and river.
- 20 October 2013, highest water level reached 1.68m – highest level over the historical 61 years.
- 5-6 December 2013, highest water level reached 1.63 – 1.65 m, breaking many parts of protective dykes, cause inundation over many roads inside the city (Thoitiet, 2013).

MỰC NƯỚC DỰ BÁO (m)

Trạm	Ngày	Đỉnh triều				Chân triều			
		Mực nước	giờ x.hiện	Mực nước	giờ x.hiện	Mực nước	giờ x.hiện	Mực nước	giờ x.hiện
Phú An	22/10	1.48	5.30	1.51	19.00	0.08	0.30	-1.06	13.00
	23/10	1.40	6.00	1.42	19.30	0.22	1.00	-1.10	13.30
	24/10	1.31	6.30	1.34	20.00	0.34	1.30	-1.14	14.00
	25/10	1.20	7.00	1.26	21.00	0.45	2.00	-1.15	14.30
	26/10	1.09	7.30	1.21	22.00	0.54	2.30	-1.12	15.00
Nhà Bè	22/10	1.40	5.00	1.48	18.30	ct	ct	-1.58	12.00
	23/10	1.30	5.30	1.38	19.00	-0.02	0.00	-1.62	12.30
	24/10	1.20	6.00	1.30	19.30	0.07	1.00	-1.60	13.00
	25/10	1.09	6.30	1.22	20.00	0.18	1.30	-1.58	13.30
	26/10	0.99	7.00	1.17	21.00	0.36	2.00	-1.53	14.00

Nhận xét : Đỉnh triều cường cao nhất ngày trên các sông và kênh rạch tại Thành phố Hồ Chí Minh ở mức cao (xấp xỉ BĐIII) trong ngày đầu sau đó xuống lại theo triều.

Dự báo viên : Trần Đình Phương, Lê Thị Ba *Người duyệt : Trần Đình Phương*

Damages from Flooding 2013

- Historically highest tide on 20/10/2013 broke a section of protective dyke at ward 28, Binh Thanh District.
- This flood pass over almost protective dykes at suburban area of HCMC, caused large – scale inundation.
- Some flood protection systems was inactive due to this historical tide.

Response

- People committee of HCMC collaborate with Ministry of Agriculture and Rural Development in Solving Flooding issue according to the Decision 1547/2008 of Prime Minister.
- The Steering Centre for Urban Flood Control (an organisation established in 2008, which reports to the to the People's Committee of HCMC) put in place the 'Ho Chi Minh City Flood and Inundation Management (FIM) Project'.
- In particular, the city focused on building dykes along the Saigon River and the peri-urban roads;
- Building tidal control sewers at the the estuaries: Saigon, Nha Be, Vam Co ... a total of more than 176 km dike and 13 large tidal sluices, with hundreds of small tidal sluice gates (Government Electronic Press, 2013).
- However, progress of the work is very slow due to difficulties in clearance.
- Some temporary solutions are also used as set in the 1200 valve to prevent tidal outlet, located 40 pumping stations with with capacity 1.000 m3 to 8.000 m3 /hour (Government Electronic Press, 2013).

- Regarding emergency response in the case of urban flooding recently, government, central departments and localities offices have the salvage and rescue promptly,
- Mobilized coordination between the relevant units (Municipal Public Security, the Department of Transport and Public Works, Sewerage company).

  However, because of missing of the on-site facilities and the low awareness of citizen ->subjective to more damage.

➔ Individual measures were not effective.

Organization for DRM – 4 Levels

1. Ministry of Agriculture and Rural Development and the Central Committee for Flood and Storm Control will preside over the implementation of the National Strategy for natural disaster prevention, response and mitigation.
2. According to their own functions and duties, ministries, sectors and localities are responsible for effectively implementing relevant contents, objectives, duties and solutions stated in the Strategy.
3. Ministry of Planning and Investment takes lead and works in collaboration with other relevant ministries and sectors to balance and arrange annual investment resources to effectively implement the Strategy.
4. People's Committees, Committees for Flood & Storm Control and Search & Rescue at provincial and city levels steer its departments to implement the National Strategy,

   a) Non-structural measures

   i) legislation and policies

   ii) consolidation of organizational structures

iii) Integration of DRM into planning

iv) strengthening of disaster warning and forecast capacities

b) Structural measures

Reasons

- Not much attention paid to urban flooding problem -> not consider urban flooding at disaster risk.
- Need to balance between structure measures and non-structure measures.
- To prevent urban flooding problems effectively, overall planning and comprehensive integration of climate change adaptation needs to be prioritized review.

Future City Center in 2020

Source: Department of City Planning and Architecture

4.0 CONCLUSION

This booklet has been published in accordance with our DRM-SD Capacity Vietnam, Laos and Cambodia. The booklet provides basic information on DRM-SD and contains informative training materials and references. We have created this booklet as an effort to provide agencies and organizations involved in Disaster Risk Management and others interested in learning more about Disaster Risk Management – Sustainable Development (DRM-SD). We hope it will find a wide audience and be instrumental in efforts worldwide to promote disaster mitigation and adaptation and to integrate sustainable development into DRM initiatives. Besides, we hope that this booklet will contribute the ideas for more effective disaster preparedness and embedding the 'build back better' principle into recovery, rehabilitation and reconstruction, to which climate services are particularly relevant.

Recognizing that capacity building is the best option to empower communities towards disaster resilience through DRM-SD, continual innovation and improvement of the approach should be mainstreamed at all levels especially by public and private sustainable related institution. Capacity building is one of the best ways to approach community as a mean of knowledge based transfer on DRM-SD. Through capacity building, we are able to change the mind set of

communities from triple bottom line perspective and develop socially responsible global citizen.

We are currently seeking for future possibilities to extend and organize similar training programs in other parts of the world. We welcome any Disaster Risk Management related agencies that have the same dream in sharing informative knowledge and experiences to collaborate together.

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