

# Country briefing on national ICT architectures in Vietnam natural disaster – resilient infrastructures

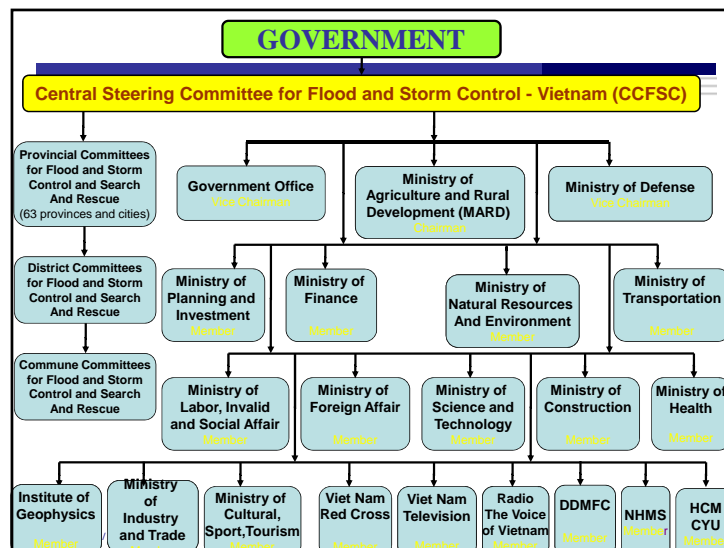


Standing office of Central committee for flood and storm control

## Content

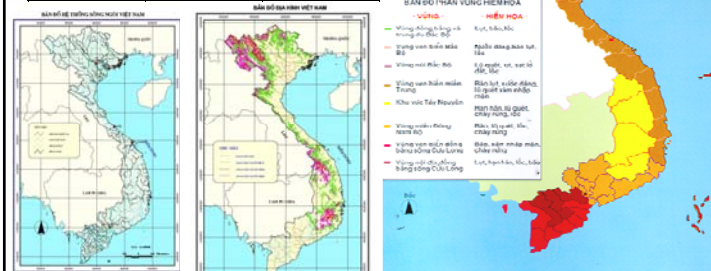
- Data transfer rain, water level, weather forecast
- Data transfer irrigation reservoirs, hydropower reservoirs
- Data transfer earthquakes, tsunamis
- Application GIS for building map disaster management
- Developing other information infrastructures
- Information dissemination between central, localities and communities
- Difficulties and challenges

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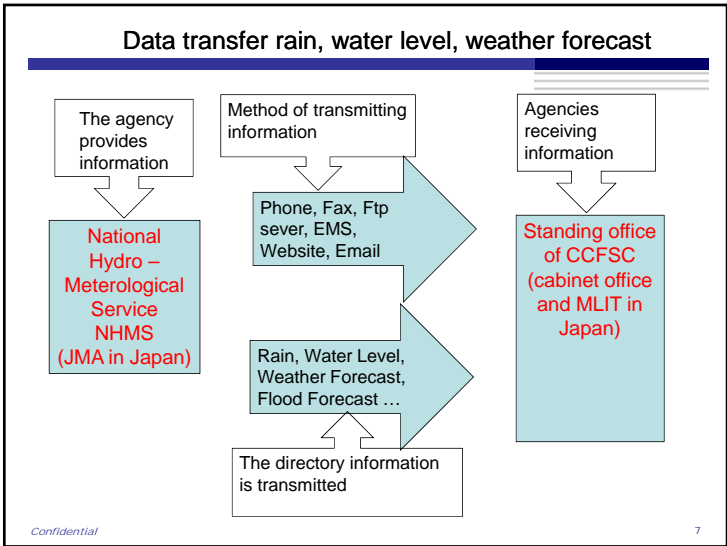
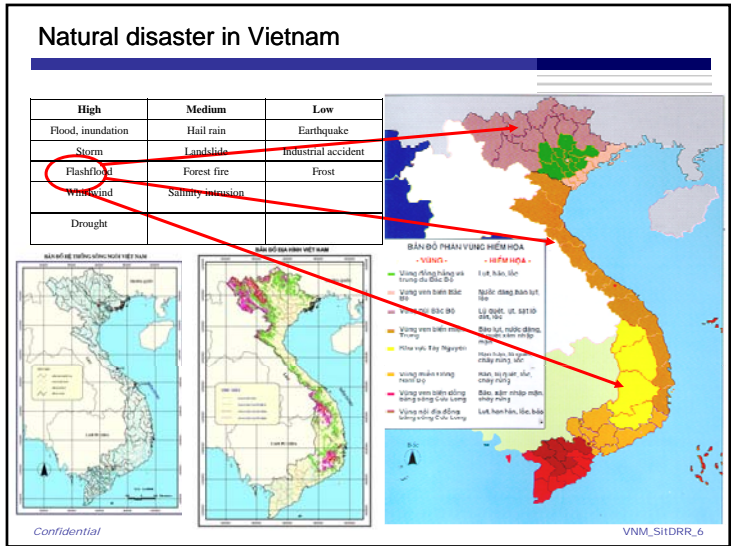
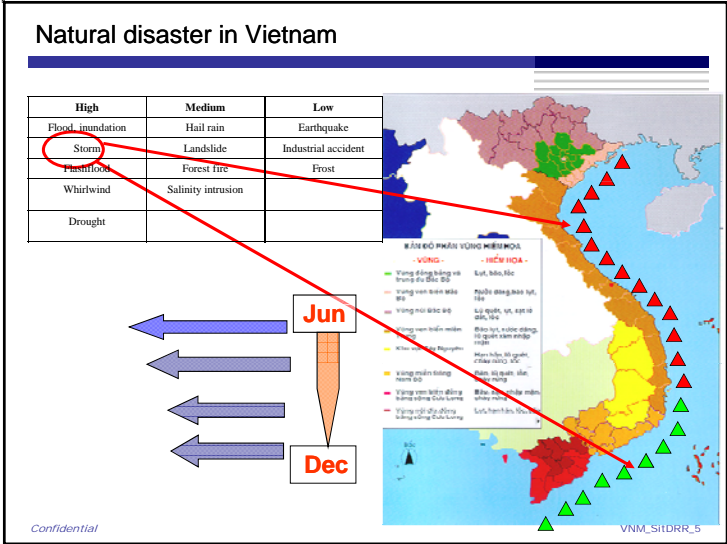
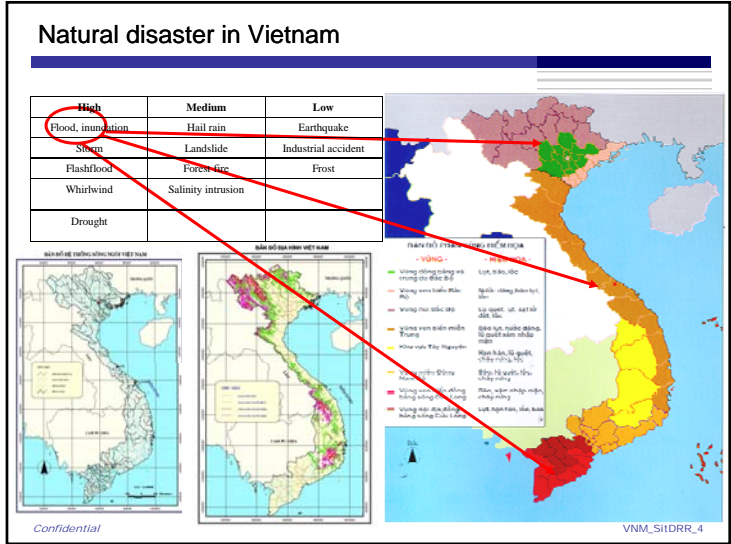
## Natural disaster in Vietnam

High	Medium	Low
Flood, inundation	Hail rain	Earthquake
Storm	Landslide	Industrial accident
Flashflood	Forest fire	Frost
Whirlwind	Salinity intrusion	
Drought		



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## Data transfer rain, water level, weather forecast

### Information rain, water level

- Transmitted by phone, Fax, FTP sever

Rainfall		Water Level	
STT	Tên trạm	STT	Tên Trạm
1	Trung 01 KISU	1	Trạm Trầm
2	Kim Thủy Hò	2	Mường Trại
3	Trà Bình Hò	3	Mường Trại
4	Đông Bình	4	Mường Trại
5	Hầm Giang	5	Mường Trại
6	Hầm Phú	6	Mường Trại
7	Núi Hò	7	Mường Trại
8	Mường Luy	8	Mường Trại
9	Hầm Mỏ	9	Mường Trại
10	Tả Lã	10	Mường Trại
11	Tả Lã	11	Mường Trại
12	Tả Lã	12	Mường Trại
13	Tả Lã	13	Mường Trại
14	Hồ Hò	14	Mường Trại
15	Bến Bình	15	Mường Trại
16	Hồ Bình	16	Mường Trại
17	Hồ Bình	17	Mường Trại
18	Bến Hò	18	Mường Trại
19	Hầm Trại	19	Mường Trại
20	Núi Hầm Trại	20	Mường Trại
21	Mỏ Hầm	21	Mường Trại
22	Lâm Cầu (V)	22	Mường Trại
23	Hầm Trại	23	Mường Trại
24	Bến Hò	24	Mường Trại

- Information of rain data: name of province, position, time (4 time daily: 1, 7, 13 and 19)
- Information of water level: name of position, river, time, value

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## Data transfer rain, water level, weather forecast

### The information of rain and water level display in LED system

Tỉnh	Tên sông	Tên trạm	Thời gian	Mức	Sa cảnh	X1
Đình Biên	Nấm Hò	BÀI YÊN	14/05-13 00	71.3	< M001	1
Đình Biên	S Nấm Hò	BÀM MỎ	14/05-13 00	145.5	< M001	1
Lâm Cầu	S Đà	LÂM SÁU (TV)	14/05-13 00	187.80	< M003	1
Sơn La	S Mã	XÁ LA	14/05-13 00	277.98	< M001	1

X1	Tỉnh	Tên trạm	Thời gian	Hiện tại	X1 ngày	X3 ngày
1	Thanh Hóa	Liên Khương	14/05-14 22	22	0	0
1	Hòa Bình	Mai Châu	14/05-14 22	22	0	0
1	Thanh Hóa	CAM THUY	14/05-14 22	20	1	1

- Information of rain displayed on the LED in COC: name of province, position, time, value
- Information of water level displayed on the LED in COC: name of position, river, time, value comparison with alarm water level, the trend

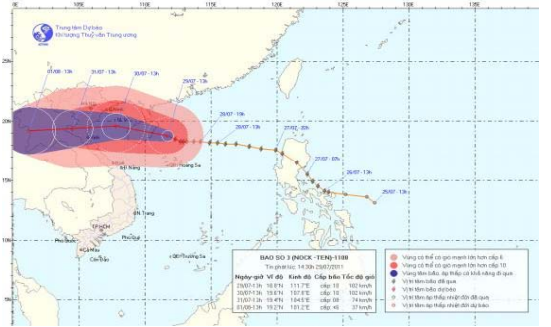
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## Data transfer rain, water level, weather forecast

### Information of weather forecast

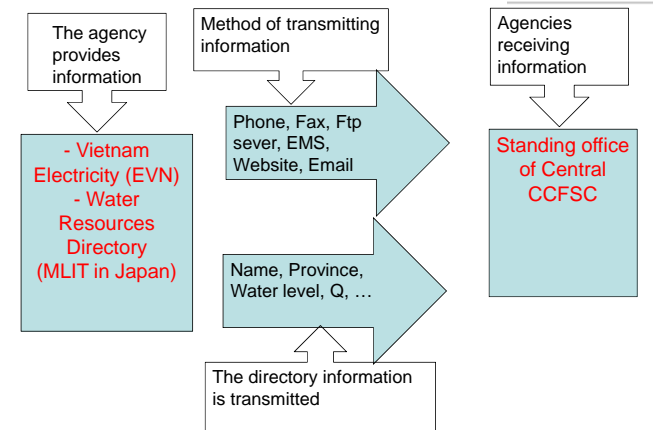
- Transmitted by phone, Fax, Website, SMS
- Information about storm includes: position, direction of movement, level, time
- Information about flood includes: position, name of province, name of river, level water, time, forecast



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## Data transfer irrigation reservoirs, hydropower reservoirs



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### Data transfer irrigation reservoirs, hydropower reservoirs

Vietnam Electricity send information of hydropower to CCFSC following way of Internet and Phone

Ngày đo	Ngày đo	Mức nước thượng lưu (mm)	Mức nước hạ lưu (mm)	Lưu lượng chảy (m <sup>3</sup> /s)	Lưu lượng xả (m <sup>3</sup> /s)	Độ cao xả (m)	Tổn thất (m)
11.00	24-10-2012	208.920	118.110	100.000	88.000	0.000	0.000
13.00	24-10-2012	208.920	118.070	90.000	8.000	0.000	0.000
15.00	24-10-2012	208.920	118.200	100.000	378.000	0.000	0.000
09.00	24-10-2012	208.930	118.000	240.000	321.000	0.000	0.000
07.00	24-10-2012	208.930	118.920	666.000	0.000	0.000	0.000
06.00	24-10-2012	208.910	118.990	813.000	0.000	0.000	0.000
03.00	24-10-2012	208.980	118.220	108.000	0.000	0.000	0.000
01.00	24-10-2012	208.880	118.070	178.000	0.000	0.000	0.000

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### Data transfer irrigation reservoirs, hydropower reservoirs

Data of irrigation or hydropower reservoirs displayed in LED system in COC

Tên hồ	Thời gian	Hl (m)	Hh (m)	Qv(m <sup>3</sup> /s)	Qr(m <sup>3</sup> /s)
Sơ Sơn - W:95% Ngập m	26/02-12 00	215 ↑	0 ↓	1200	1000
Hồ Sông Hình - W:337 m	21/03-12 00	209 ↑	0	0	0
Hồ sông Krông Hnang -	21/03-12 00	255 ↑	0	0	0
Buôn Tủa Srah - W:787.1	04/04-07 00	476.56 ↑	427.2 ↑	50 ↑	101

Qv(m <sup>3</sup> /s)	Qr(m <sup>3</sup> /s)	Hl CP (m)	Qra CP(m <sup>3</sup> /s)	SCXM	SCXO	GS
0.01	28	<= 4515 m				
950 ↑	0	<= 4117.0m				
19	88	<= 4570 m		0%	0%	
4.9	1.9	<= 1545 m		0%	0%	

Information about reservoirs displayed on the LED includes: name, time, water level, inflow, outflow of discharge

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### Data transfer irrigation reservoirs, hydropower reservoirs

Water level measurement system



This system setup in 10 big reservoirs and measurement data automatically transmitted to the relevant agencies with rain gauge and hydrological gauge system

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### Data transfer irrigation reservoirs, hydropower reservoirs

Monitoring camera



Monitoring camera recorded in big reservoirs and displayed in COC

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## Data transfer irrigation reservoirs, hydropower reservoirs

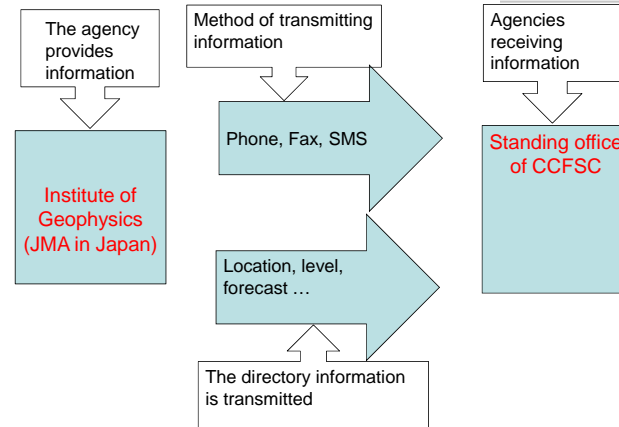
Displayed in COC



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## Data transfer earthquakes, tsunamis



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## Tsunami warning system



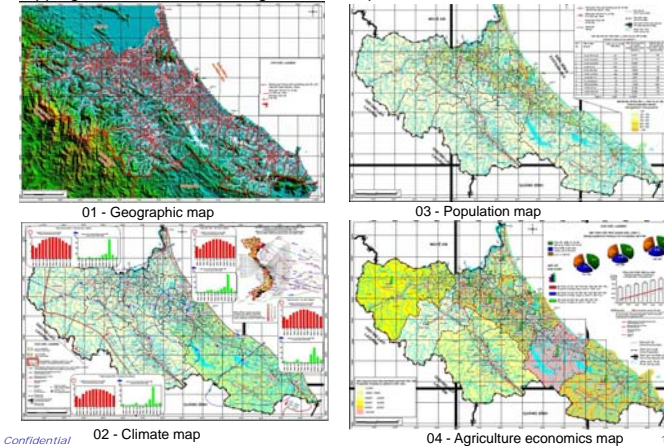
Project of Tsunami Warning System in high-risk areas  
10 pilot tsunami warning in Da Nang city already setup

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## Application GIS for mapping disaster risk

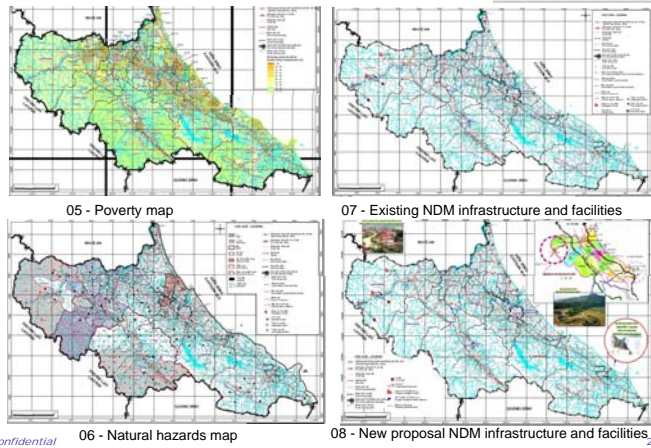
Mapping for disaster risk management in 12 provinces at Central



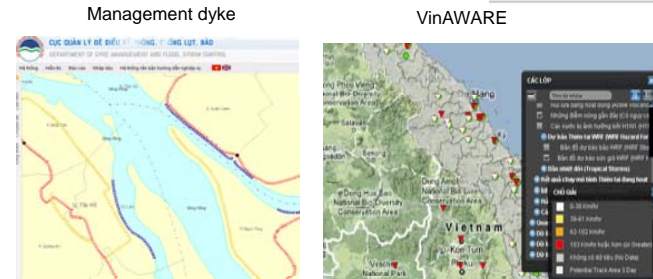
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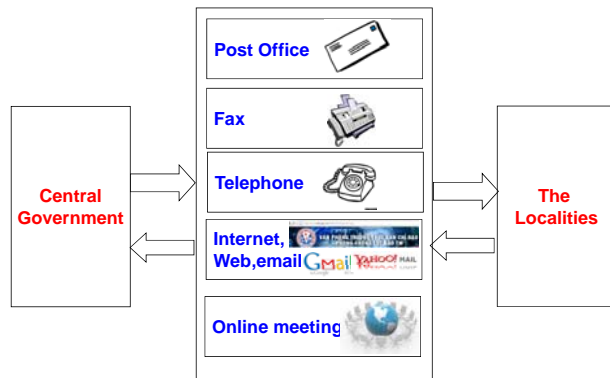
## Application GIS for mapping disaster risk



## Developing other information infrastructures



## 7. Information transmission system between the central Government and localities

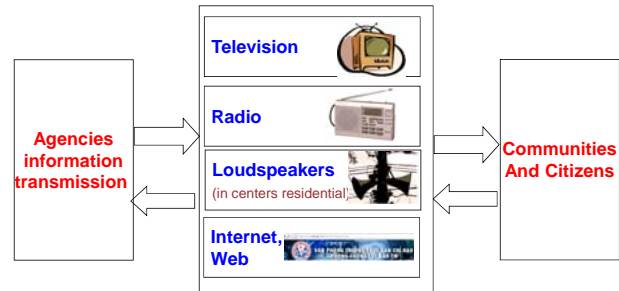


## 7. Information transmission system between the central Government and localities

Website <http://www.cfsc.gov.vn>



## Information dissemination systems to communities



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## Difficulties and challenges

- Disaster risk more vulnerable, unpredictable, frequency
- Institution improvement
- Urbanization and industrialization
- Capacity building in local government
- Community based on disaster risk management - CBDRM
- Funds for disaster management

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Thank you for your kind of attention!

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