


## WISDOM: Water related Information System for the Mekong Delta; 2007 - 2013

Dr. Claudia KUENZER, German Aerospace Centre DLR  
Presentation in Deltas for Climate Change Conference September 29th  
2010 in, Rotterdam, Netherlands

Slide 1


Vortrag > Autor > Dokumentname > Datum




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### WISDOM: Water Related Information System for the Sustainable Development of the Mekong

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für Bildung  
und Forschung




Vietnam: 86 Mio. Inhabitants


Mekong: 4,500 km  
Basin: 800,000 km<sup>2</sup>

Tibet, through China,  
border between Myanmar/Laos  
Thailand/ Laos, through  
Cambodia, into South Vietnam

Delta: 70,000 km<sup>2</sup>

**Challenge: cross boundary issues, dam building in North, China not in MRC, etc.**





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Mekong: a River Landscape of Enormous Extent:  
Transport, Land Accessibility, Flooding

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Rainy season May-Nov  
Dry season: Dec-Apr

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Annual Floods coming from the North

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Source: Xinhua

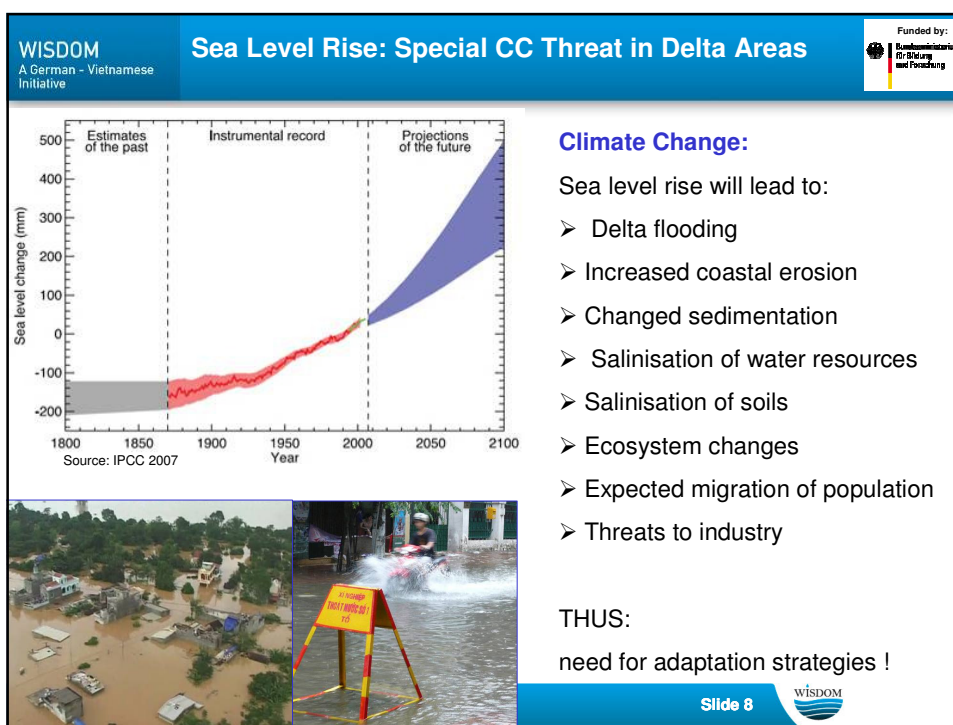


## High Population Pressure in the Cities Land Consumption, Infrastructure, Pollution



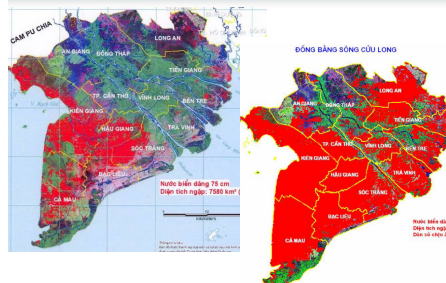
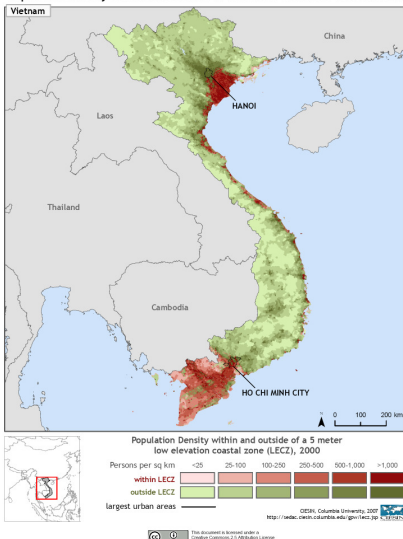
## Houses in Suburban Areas along the Mekong Unsufficient Drinking Water Supply







Population Density within and outside of a 5m Low Elevation Coastal Zone



#### Example Mekong Delta

- 1m SLR would directly affect 1/4 of the population and 31% of the area
- Increase in typhoon activity
- Increased flood variability
- Salinisation
- Drought



RHEINISCH-FRIEDRICH-WILHELM-UNIVERSITÄT

#### German Partners

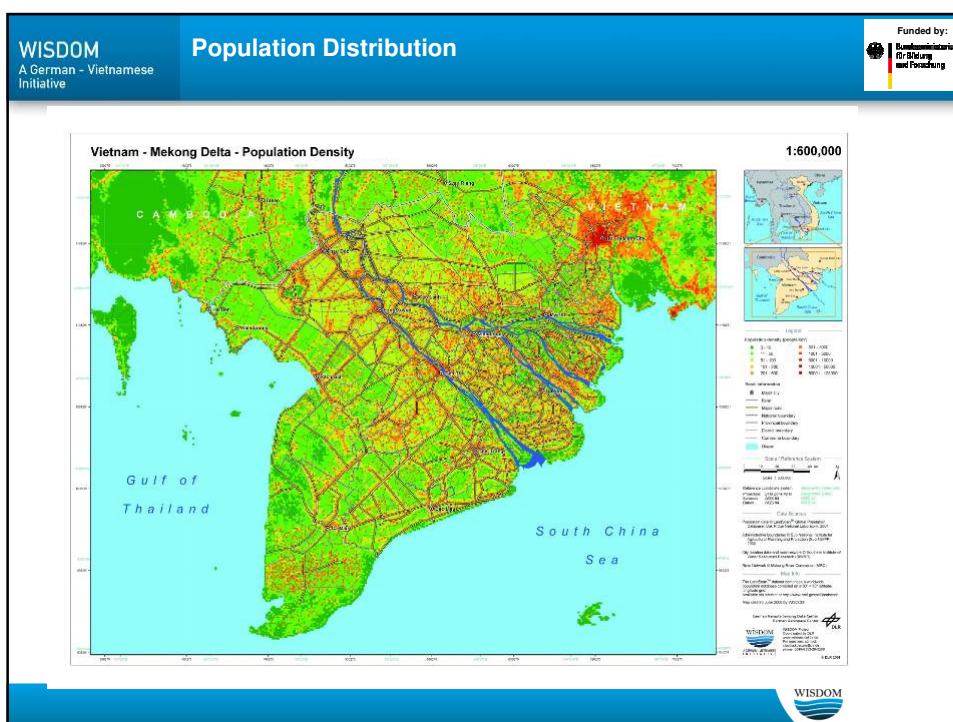
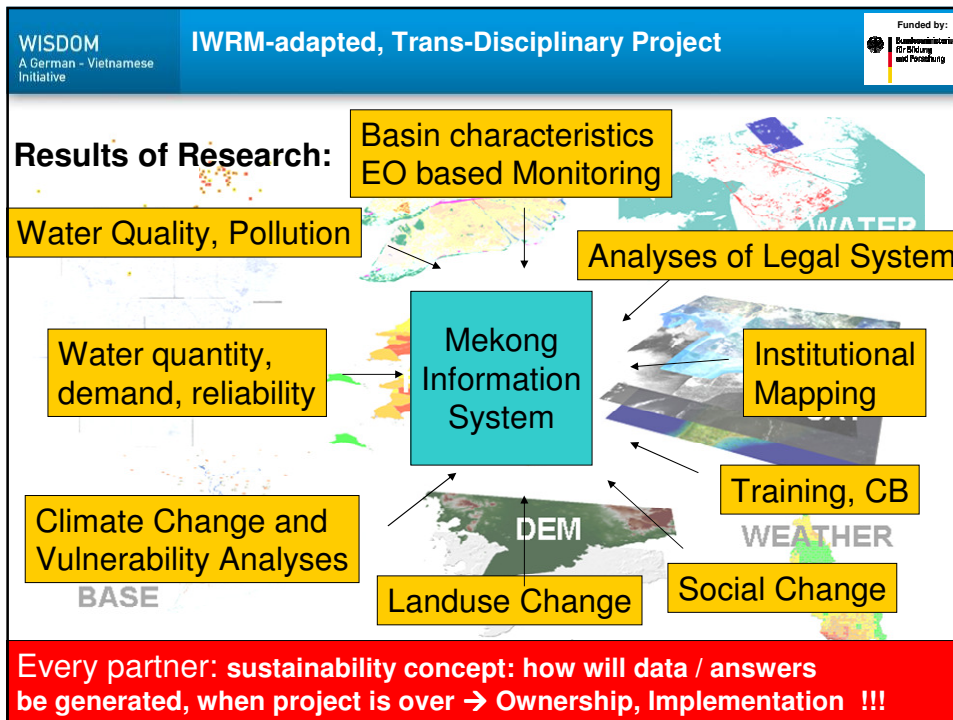
- DLR
- Uni Würzburg
- UNU-EHS
- ZEF
- INRES
- GFZ
- Eomap
- Hydromod
- LatLong

#### Vietnamese Partners

- SIWRR, Mard
- VAST GIRS
- Sub-Niapp, Mard
- SISD, MoE
- CTU, MoE
- SRHMC, Monre
- VNU, MoE
- ITB, Monre
- CWRIP, Monre
- CWRI, Monre

50 scientists, 15+5 PhDs students

1 BMBF funded CIM Position at MOST-SRO



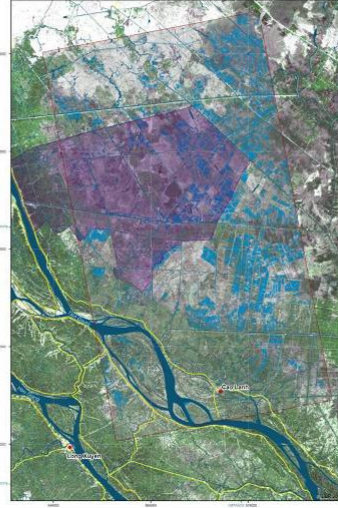


## Viet Nam - Plain of Reeds - Seasonal inundation

Rainy season - October 20, 2007



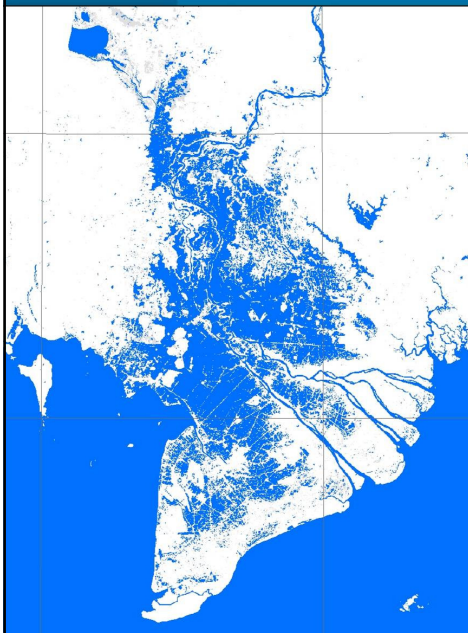
Dry season - January 05, 2008



1:150.000

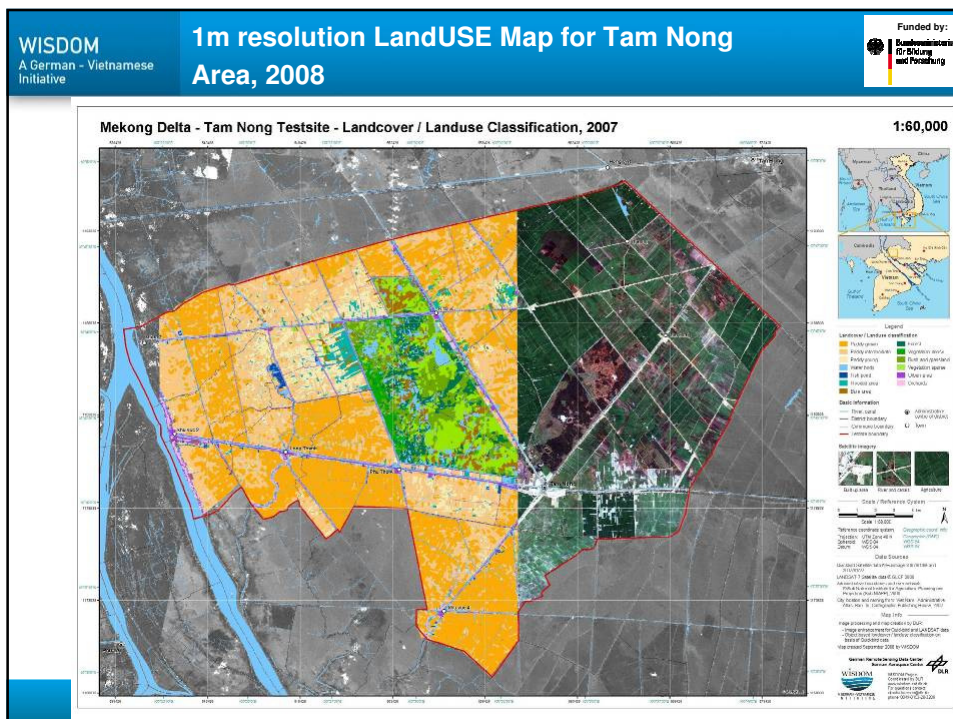


Slide 13







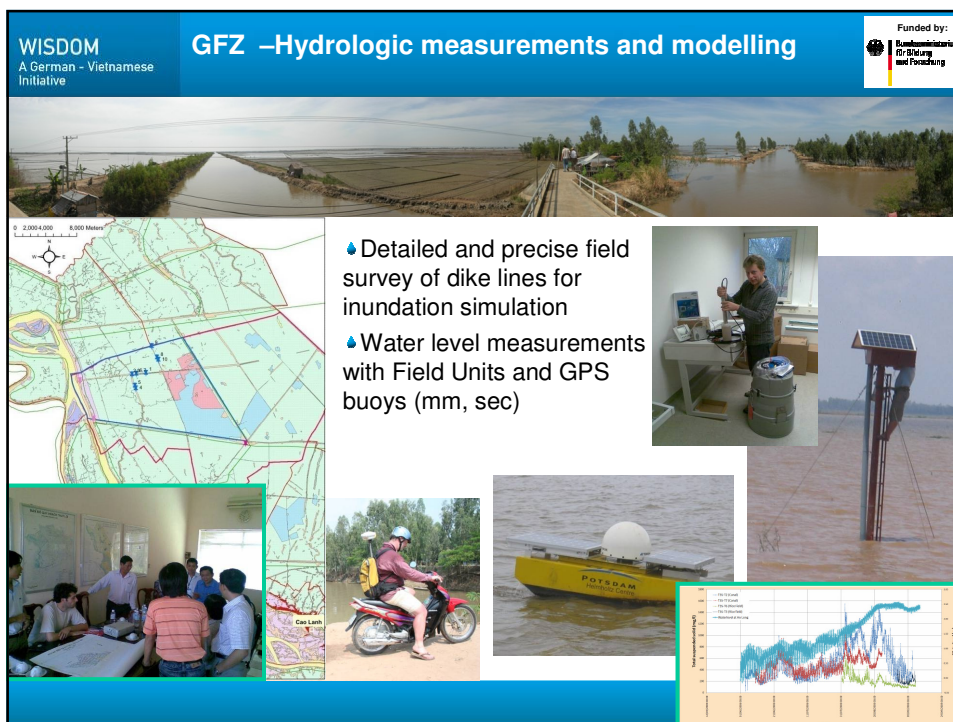
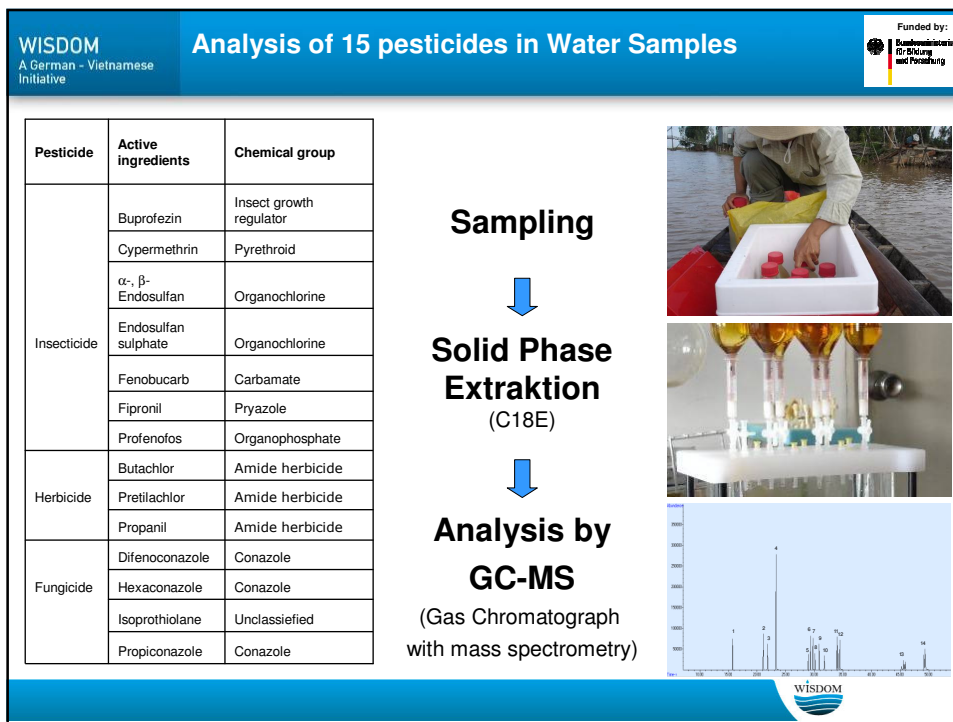




- IT Park of 20 ha
- EADS supported
- MODIS, Spot, ASAR
- Further sensors to come
- Exception: good link to South
- WISDOM algos in VN
- Processing for IS in VN







### Water level long term from 70-year time series:

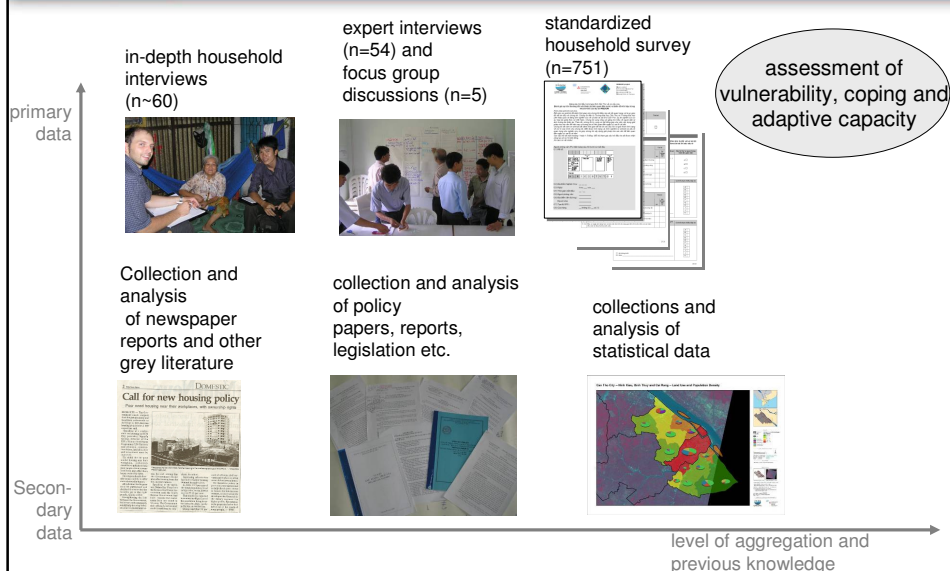
- Trend analyses: rainy season flow decreases, dry season flow increases. BUT: **Variability from year to year strongly increasing, more extreme events, drought years often followed by extreme floods etc.**

### Short term water level analyses based on stations and buoys:

- Tidal influences very strong even in Tam Nong 170km away from the coast, water level 6h rhythm
- Turbidity also mainly influences by tide: low during high tide, high during low tide
- Acidity of water strongly influences turbidity: high (lot of Al) then less turbid

### Modelling:

- Too early for results, model calibration ongoing



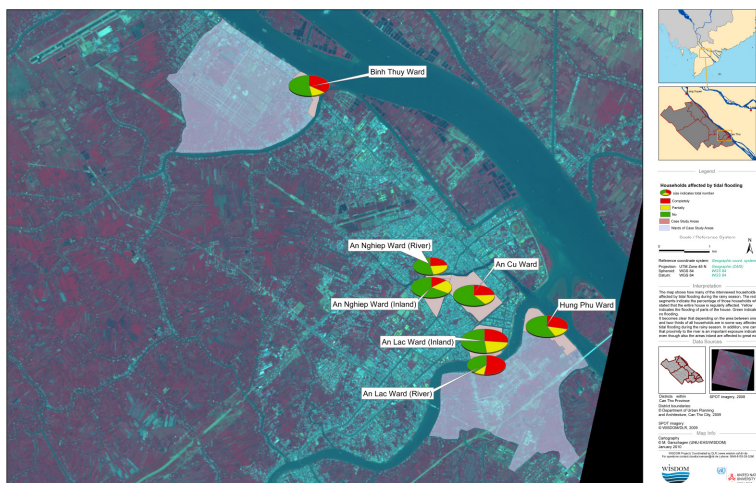


### Vulnerability Assessment Can Tho City – Research Sites and Samples Household Survey

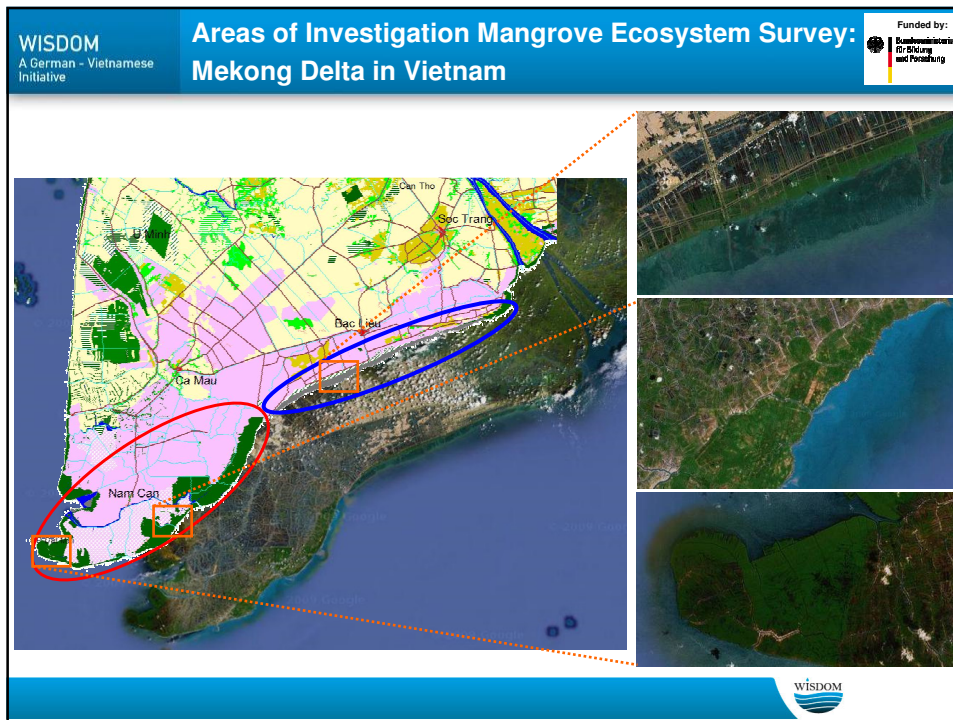


Source: own draft M. Garschagen

### Households Affected by Regular Tidal Flooding During Rainy Season



Source: own draft M. Garschagen



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## Mangrove mapping for Ecosystem Service Surveying

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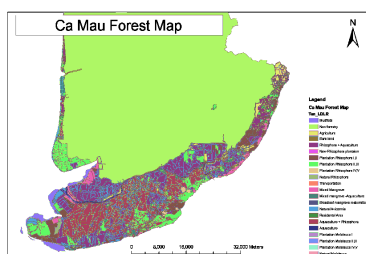
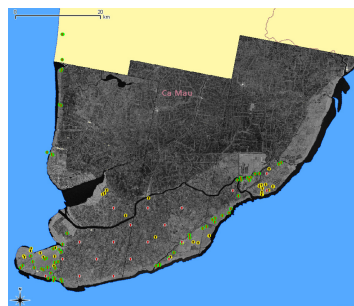
- Discrimination of dense mangrove forests from mangroves mixed with aquaculture
- Estimation of mangrove coverage in the mixed aquacultural fields
- Household survey, socio-economic questionnaires; Goal: assess Ecosystem Service value of mangroves along Delta's coast

Very dense mangrove forest

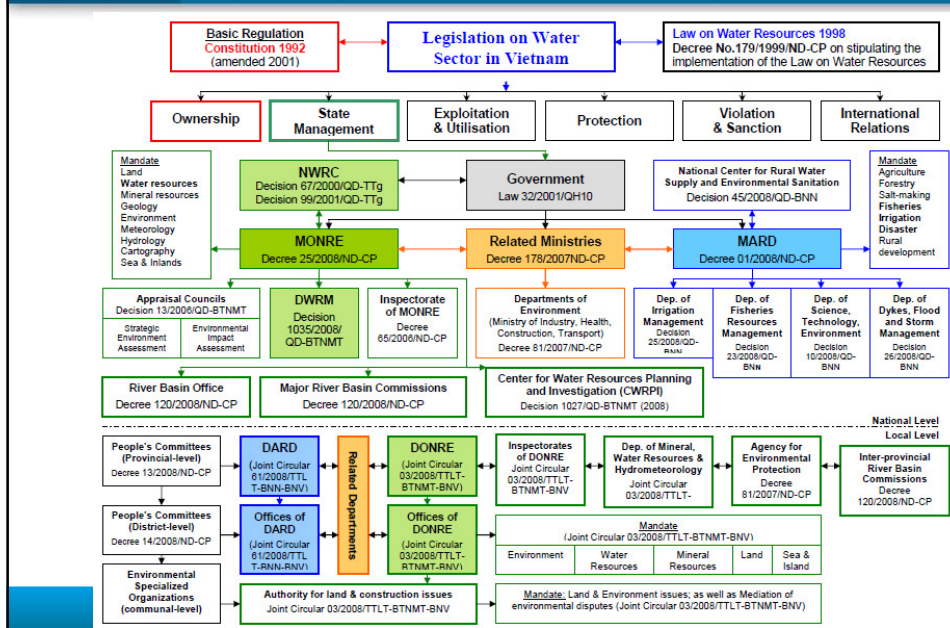
Mangrove forest of lower tree density, reforestation after converting from shrimp ponds

Shrimp farming and mangrove plantations

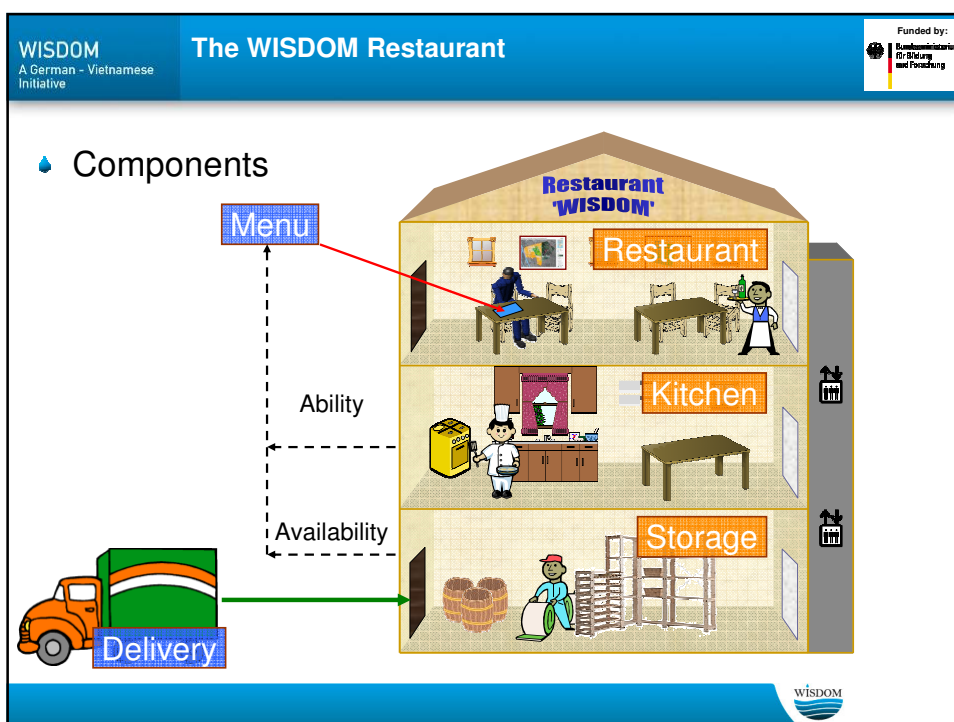
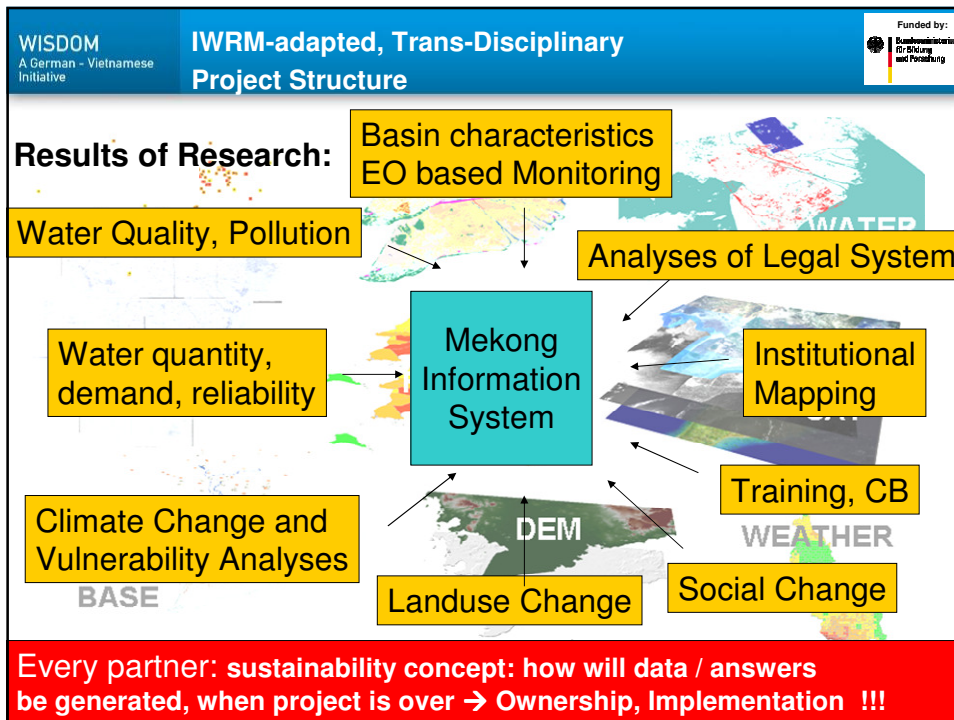
- Extensive sampling in 2009 and 2010 on: Species, Tree density, Tree diameter, tree height, tree width, growing stage, age, photographs
- Household information on value of mangroves for: construction-material, fish breeding space, honey, erosion control, medicine, and other economic benefits



- In 2012: Statement: 1 km<sup>2</sup> of Mangrove in the coastal provinces of ,xyz' is worth ,xyz' USD. Model adopted from Thailand → Monetary focus improves government's will to protect







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## The WISDOM Restaurant

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💧 **Ordering**

*Menu*

- 💧 **Sensor data**
  - 💧 Water level
  - 💧 Pesticides
- 💧 Thematic maps
- 💧 Statistics
- 💧 Geographic data
- 💧 Yellow pages

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## The WISDOM Restaurant

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💧 **Order taking**

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Ingredients gathering

„Fresh Water level measures for the mekong delta at position XY, please“

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The WISDOM Restaurant

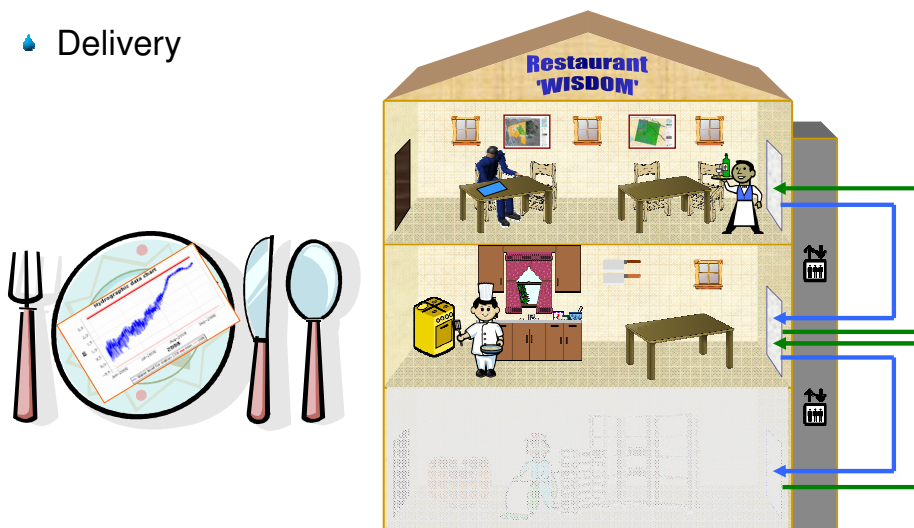
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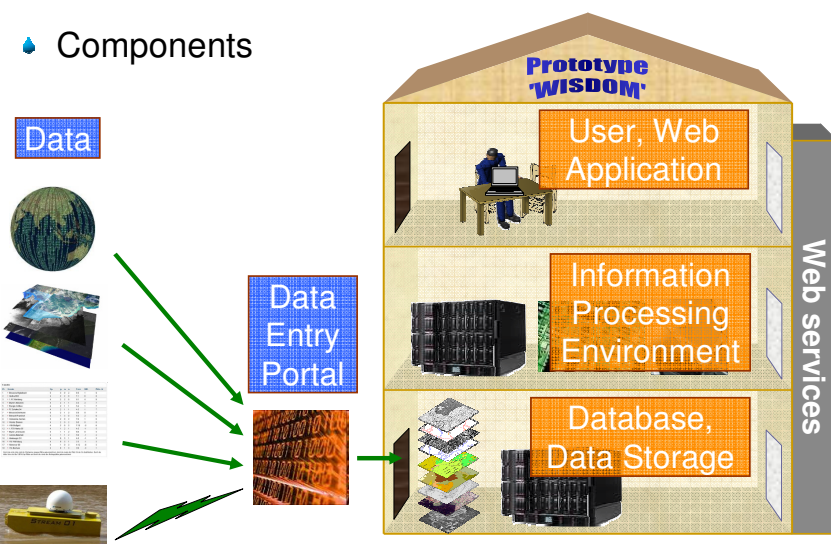
Cooking

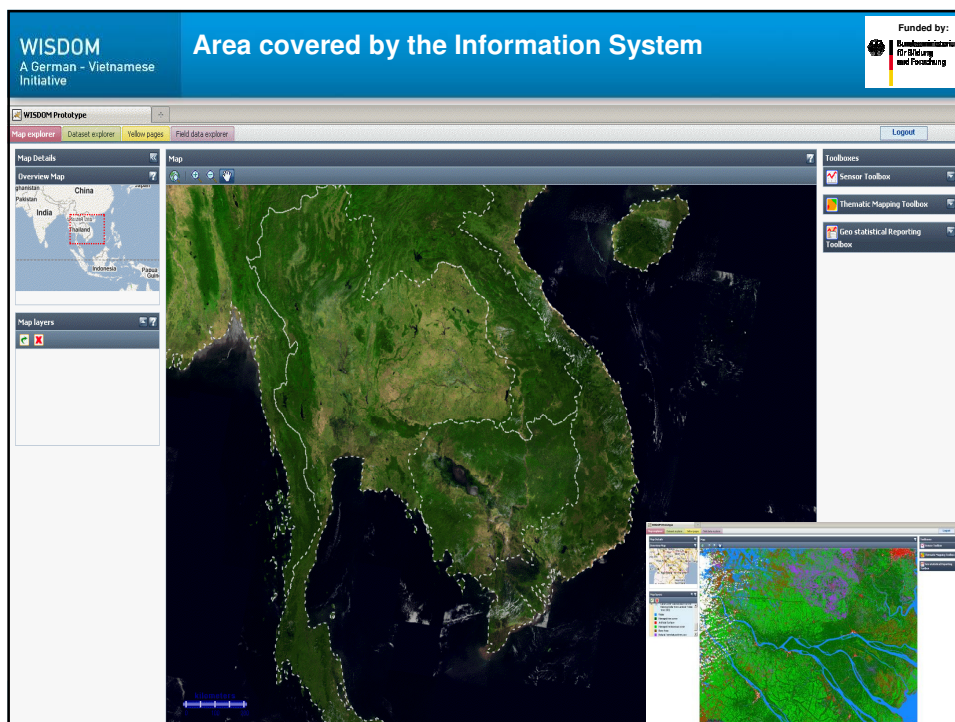
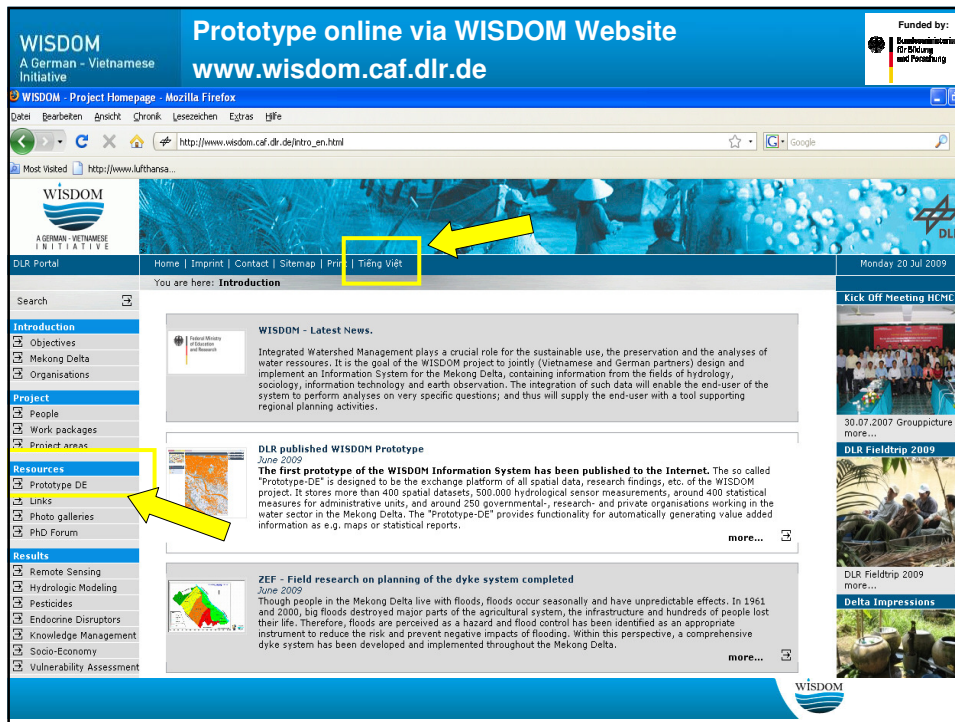


## Delivery



## Components

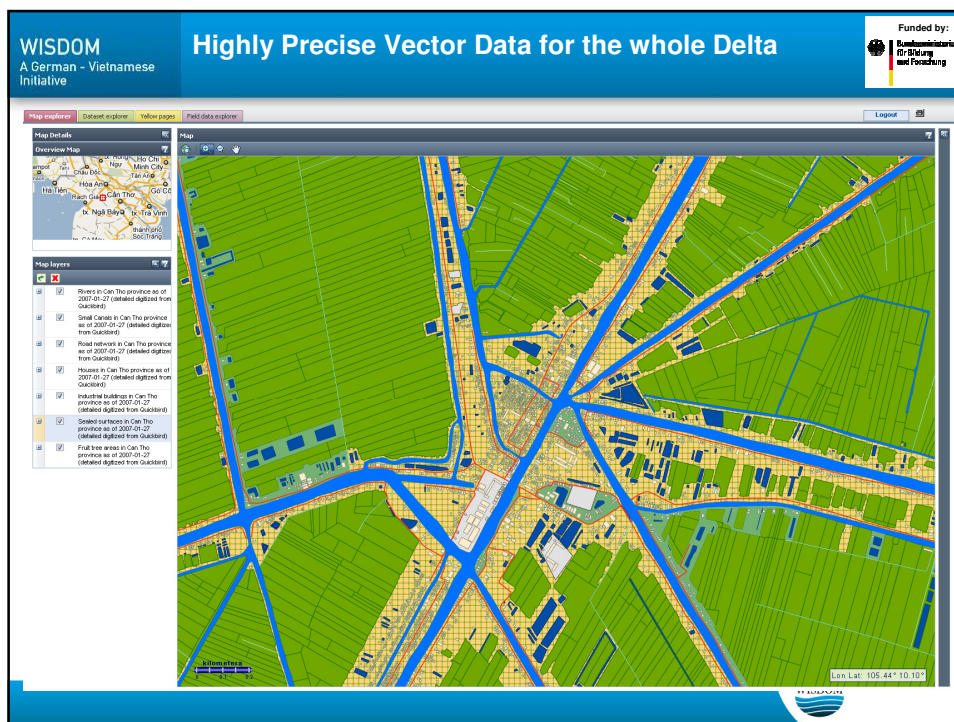
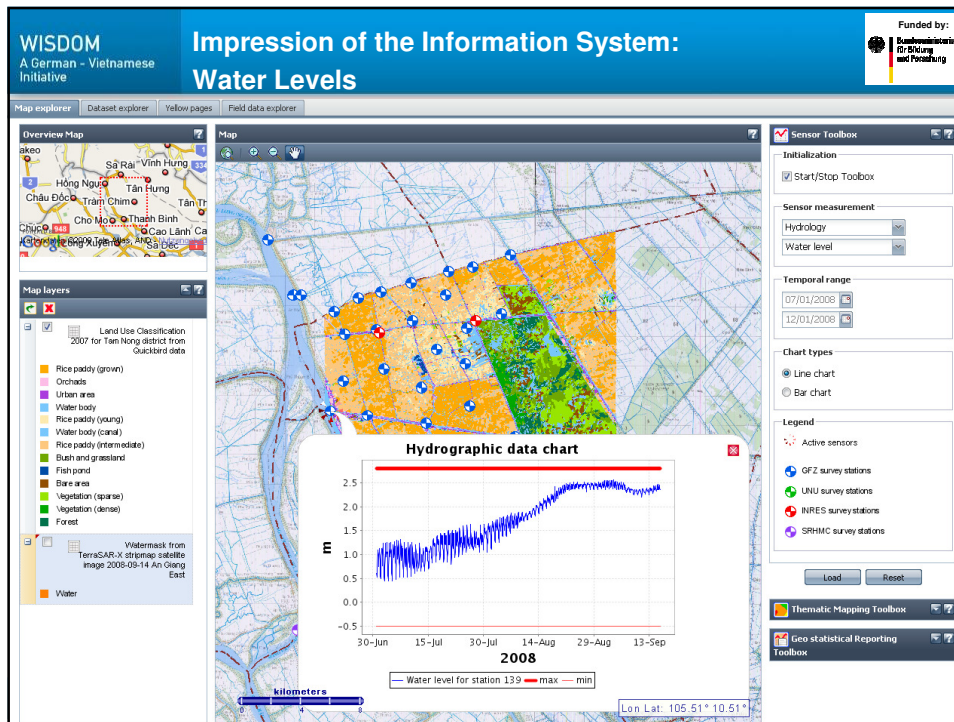




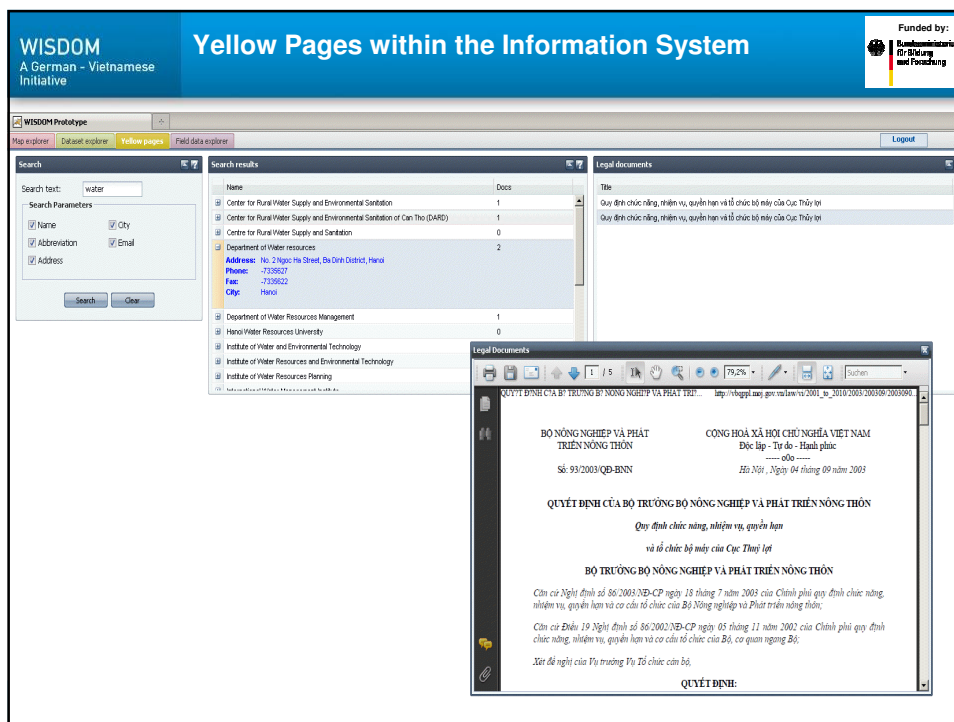














- National ministerial users for support with set up of Water related Database and National Environmental Database (MONRE) and Natural Hazard Database (MOST)
- Users of certain components of the IS: DONREs, DARDs in the Mekong Delta for supporting planning processes
- Scientific Users: WISDOM partners and extended group of scientific organisations; 'scientific' Information System e.g. at SIWRR, CTU, VNU
- Local people (no IS) but receiving information and education through joint work, capacity building, participatory case study approaches

WISDOM User Workshop: DONRE, DOST, DARD of Delta Provinces

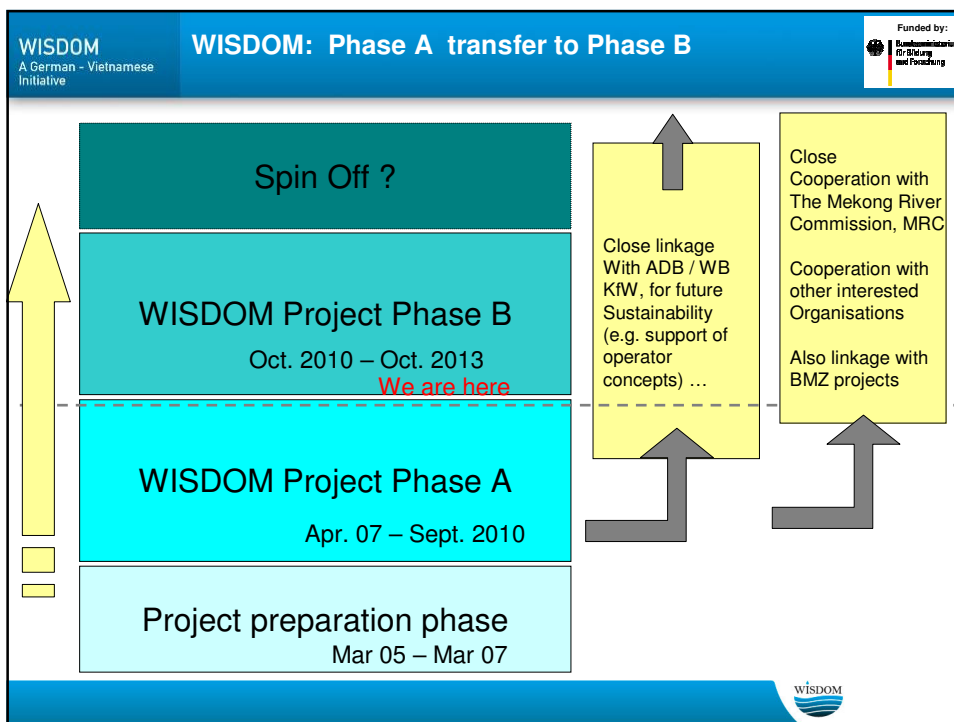














[www.wisdom.caf.dlr.de](http://www.wisdom.caf.dlr.de)