

Water Logging in the South West Bangladesh:

Putting into operation Master Plan for Agricultural Development in Southern region

Wais Kabir, FAO

Mike Robson, FAOR

Introduction and context (FAOR)

MasterPlan for development of Southern Region focused on

- (i) biophysical constraints, inefficient resource use
- (ii) lack of coordination, institutional weaknesses

Highlighted need for intensification, and diversification

- Crops, horticulture, agroforestry
- Fisheries
- Livestock
- Nutrition
- Water management
- Polder management
- Drainage improvement
- Agri-business
- Agricultural credit
- Capacity building

How to put it into operation?

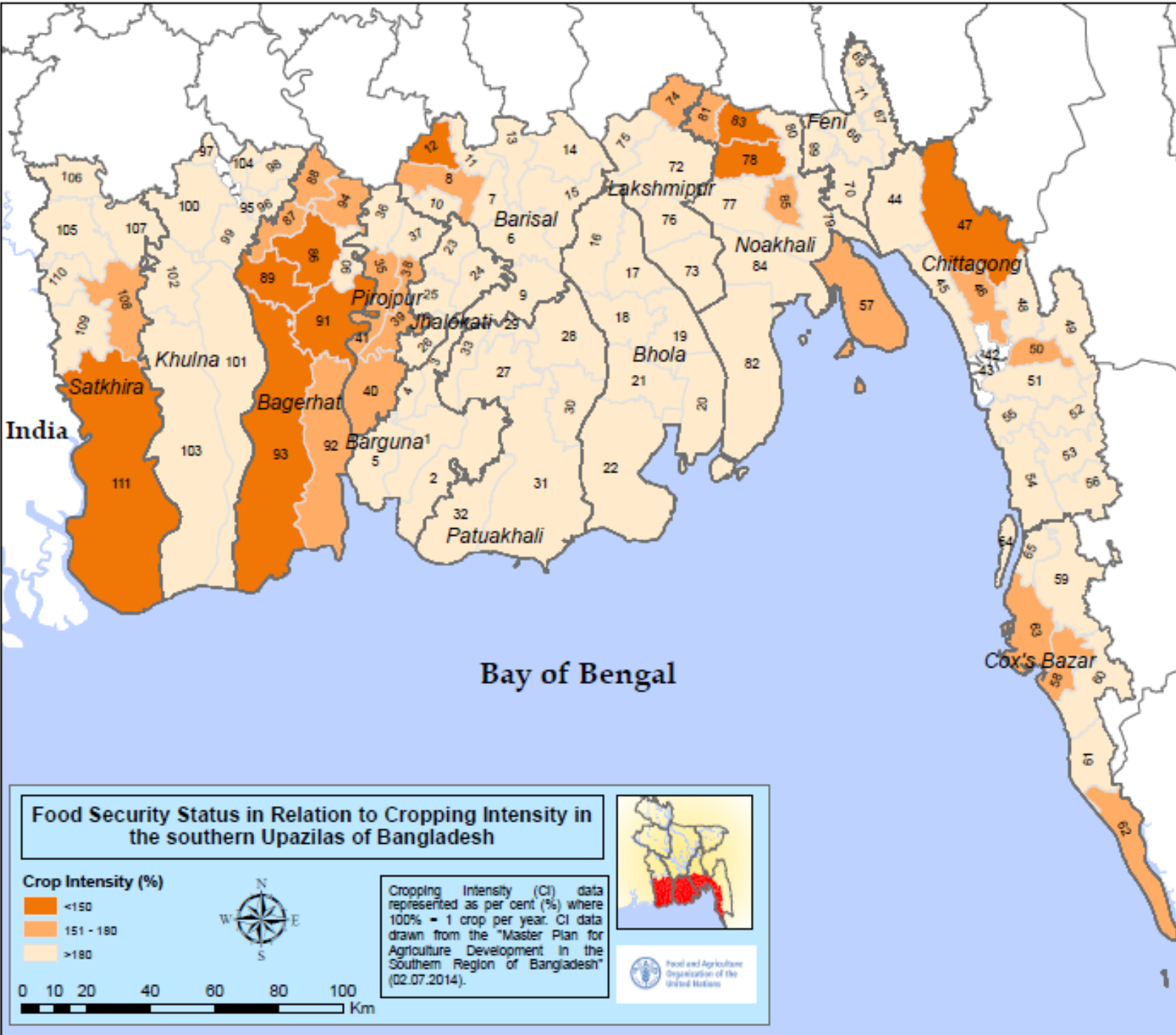
Presented MasterPlan for development of Southern Region (July 2013; April 2014) - conclusion:

- donor support for a large investment in a major programme is yet to come
- concrete interest in some of the themes

Initiatives to mobilise resources relating to the MasterPlan

- analyse hotspots of low cropping intensity, with BADC (FAO)
- pilot work on nutrition for pregnant women and lactating mothers – on nutrition education, food preparation and homestead gardening (USAID)
- distribution of equipment with training to water user groups (Netherlands)
- Water-logging study and proposals combines 7 of the themes (DfID)

Cropping intensity



ID	District	Upazila	CI (%)
1	Barguna	Barguna Sadar	222
4	Barguna	Bamna	217
7	Barisal	Babuganj	218
8	Barisal	Wazirpur	176
10	Barisal	Banari Para	183
12	Barisal	Agailjhara	150
20	Bhola	Manpura	225
23	Jhalokati	Jhalokati Sadar	201
26	Jhalokati	Kanthalia	206
27	Patuakhali	Patuakhali Sadar	209
28	Patuakhali	Bauphal	210
33	Patuakhali	Mirzaganj	240
35	Pirojpur	Pirojpur Sadar	171
38	Pirojpur	Kawkhali	178
39	Pirojpur	Bhandaria	159
40	Pirojpur	Mathbaria	178
41	Pirojpur	Zianagar	156
46	Chittagong	Hathazari	166
47	Chittagong	Fatikchhari	144
50	Chittagong	Boalkhali	177
57	Chittagong	Sandwip	166
58	Cox's Bazar	Cox's Bazar Sadar	178
62	Cox's Bazar	Teknaf	166
63	Cox's Bazar	Maheshkhali	179
70	Feni	Sonagazi	213
74	Lakshmipur	Ramganj	178
75	Lakshmipur	Roypur	240
76	Lakshmipur	Kamalnagar	242
77	Noakhali	Noakhali Sadar	222
78	Noakhali	Begumganj	112
81	Noakhali	Chatkhil	153
83	Noakhali	Sonaimuri	126
85	Noakhali	Kabirhat	157
86	Bagerhat	Bagerhat Sadar	141
87	Bagerhat	Fakirhat	165
88	Bagerhat	Mollahat	180
89	Bagerhat	Rampal	107
91	Bagerhat	Morrelganj	145
92	Bagerhat	Sarankhola	178
93	Bagerhat	Mongla	104
94	Bagerhat	Chitalmari	168
99	Khulna	Batiaghata	202
102	Khulna	Paikgachha	200
103	Khulna	Koyra	190
105	Satkhira	Satkhira Sadar	222
108	Satkhira	Assasuni	167
110	Satkhira	Debhata	222
111	Satkhira	Shyamnagar	112

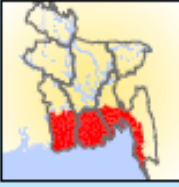
Food Security Status in Relation to Cropping Intensity in the southern Upazilas of Bangladesh

Crop Intensity (%)

- <150
- 151 - 180
- >180



Cropping Intensity (CI) data represented as per cent (%) where 100% = 1 crop per year. CI data drawn from the "Master Plan for Agriculture Development in the Southern Region of Bangladesh" (02.07.2014).



0 10 20 40 60 80 100 Km

nutrition



Farm equipment





Water logging study (DfID)

To identify the causes of waterlogging in SW Bangladesh
and make recommendations on how it can be addressed

(team of seven, worked from May 2014)

The context: water-logging...*

** seasonal or longer-lasting (e.g. 4-6+ months- July/August to Dec)
flooding, in areas not previously inundated*

- is not new
- is caused by poor drainage of seasonal rain
- occurs frequently in the same localities in SW Bangladesh
- has a widespread impact (typically 2-500,000 people affected)

Maximum area of water logging in 2013:(Remote Sensing Image analysis)

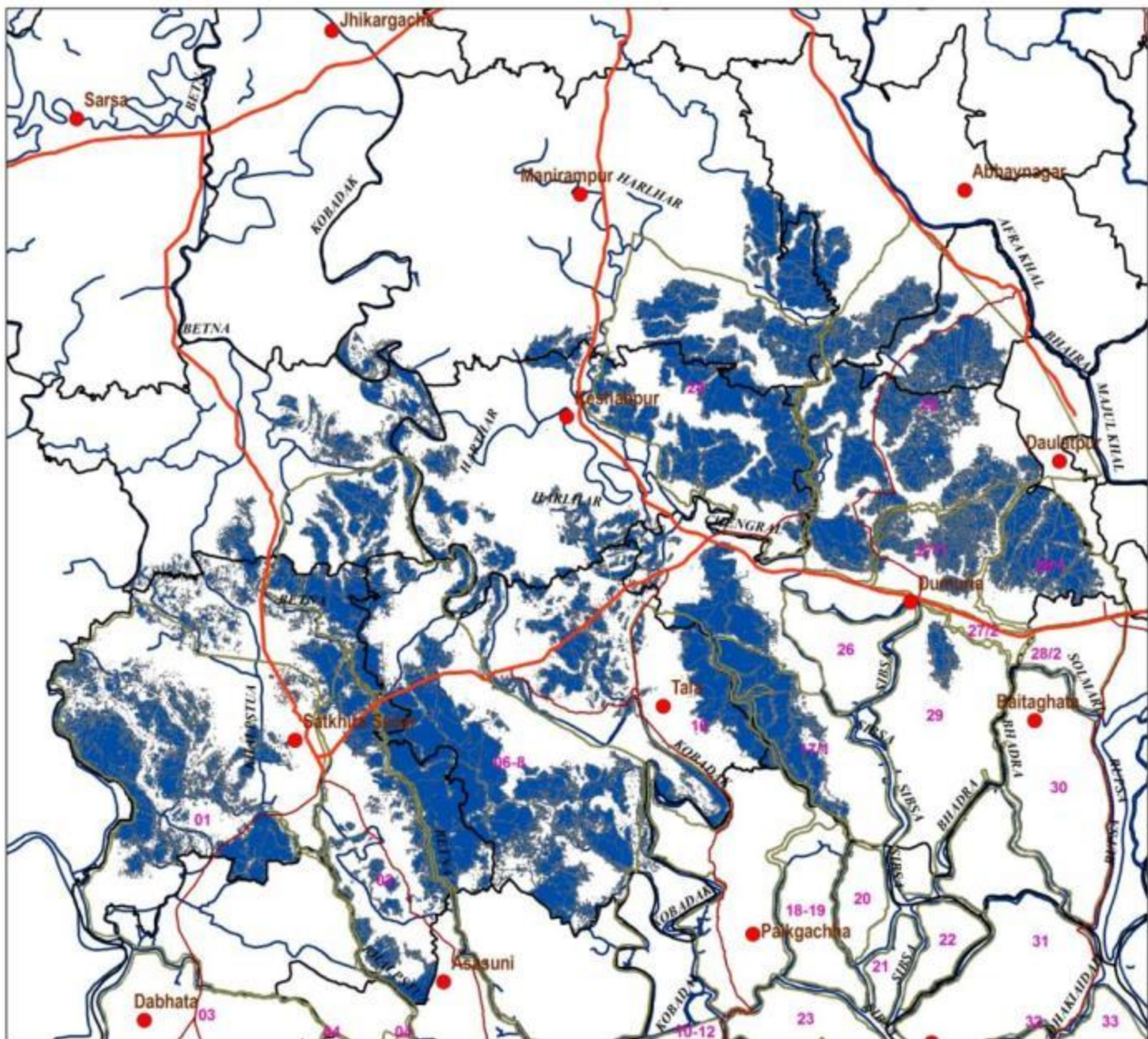
"Mapping Exercise on Water Logging in Southwest Bangladesh"

Water Logged Area
On 13 Nov 2013

Legend

- district & upazila hq locations
- National_Highway
- Zila_Road
- coastal_polders
- Thana_BND
- Water_Logged_Area_2013
- Selected_Rivers

0 2 4 8 12 km



**Water Logged Area
On 13 November
2013**

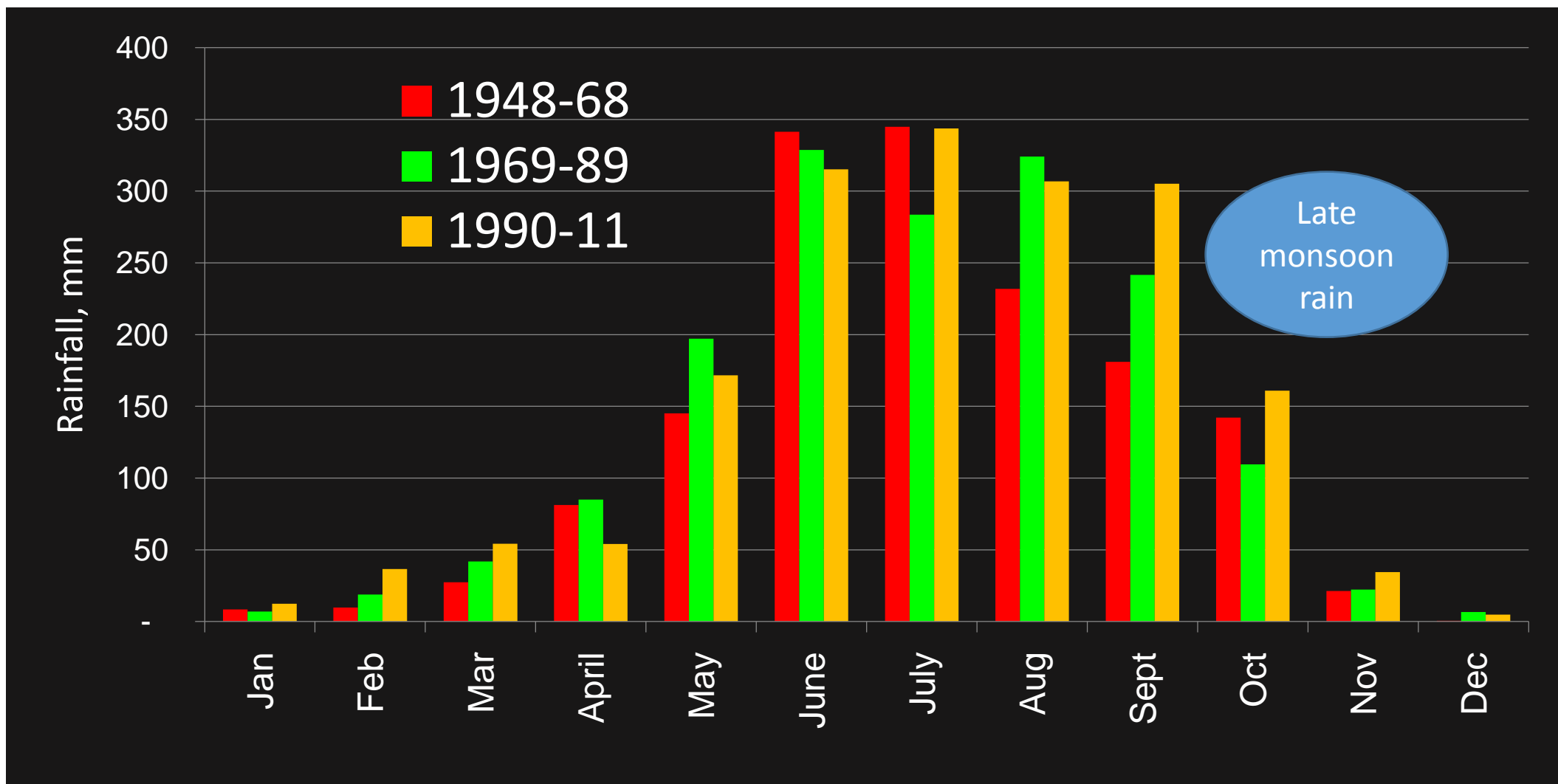
Total Area: 68,194 ha

Area under water logging, 2013 (July/August- November/December)

Districts	Total Area under districts	No. Upozila affected	Area affected Ha	% of Area in districts
Jessore	261,667	3	15,700	6
Khulna	475,575	2	19,023	4
Satkhira	371,889	3	33,470	9
Total	1,109,131	8	68,197	6

Jessore: Monirampur, Keshobpur and Avoyrnagar, Khulna: Dumuria and Fultala, Satkhira: Satkhira sadar, Tala and Kolaroa Upazila.

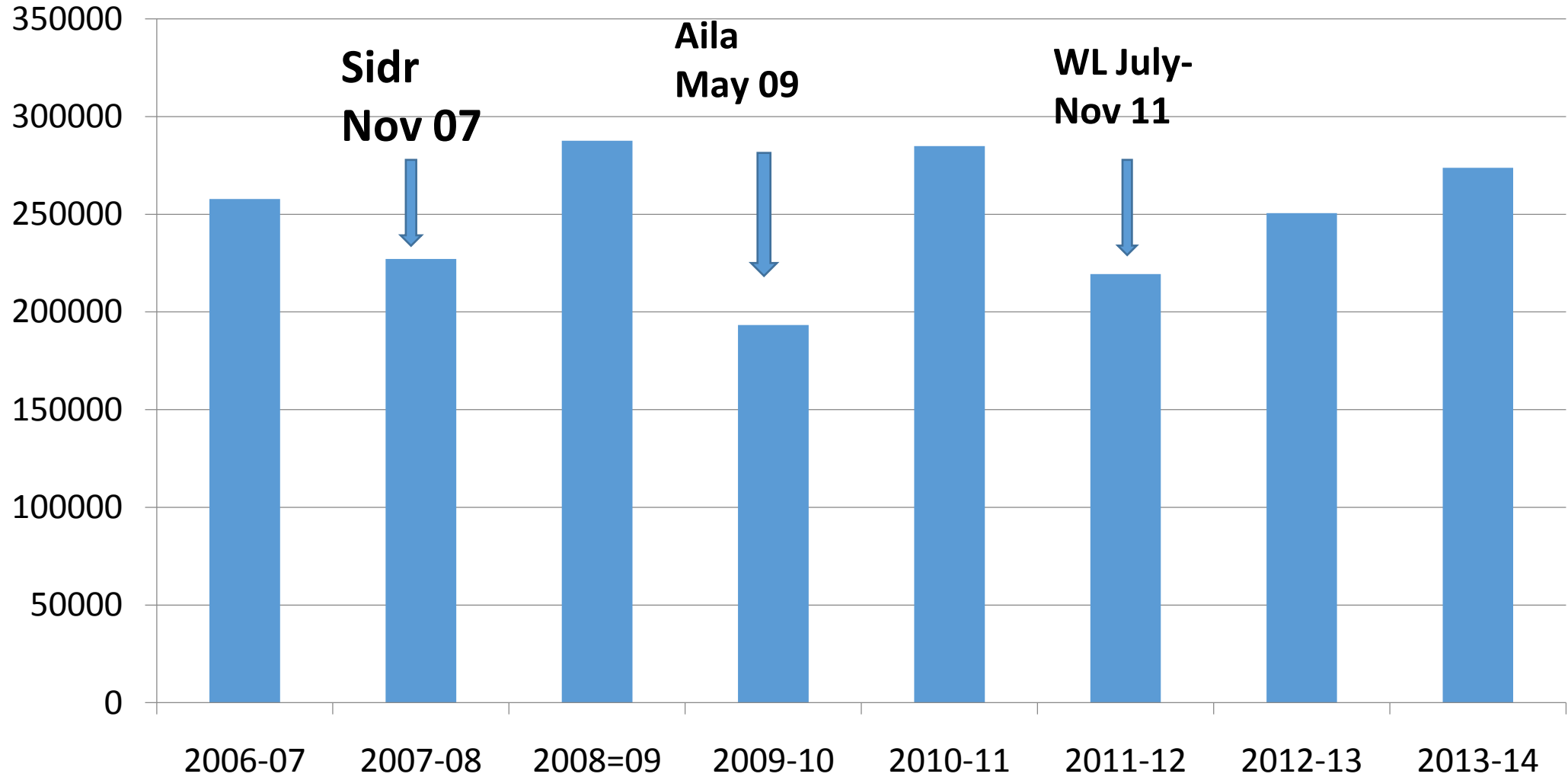
Mean monthly total rainfall at Khulna during 1948-2011 (BMD data)



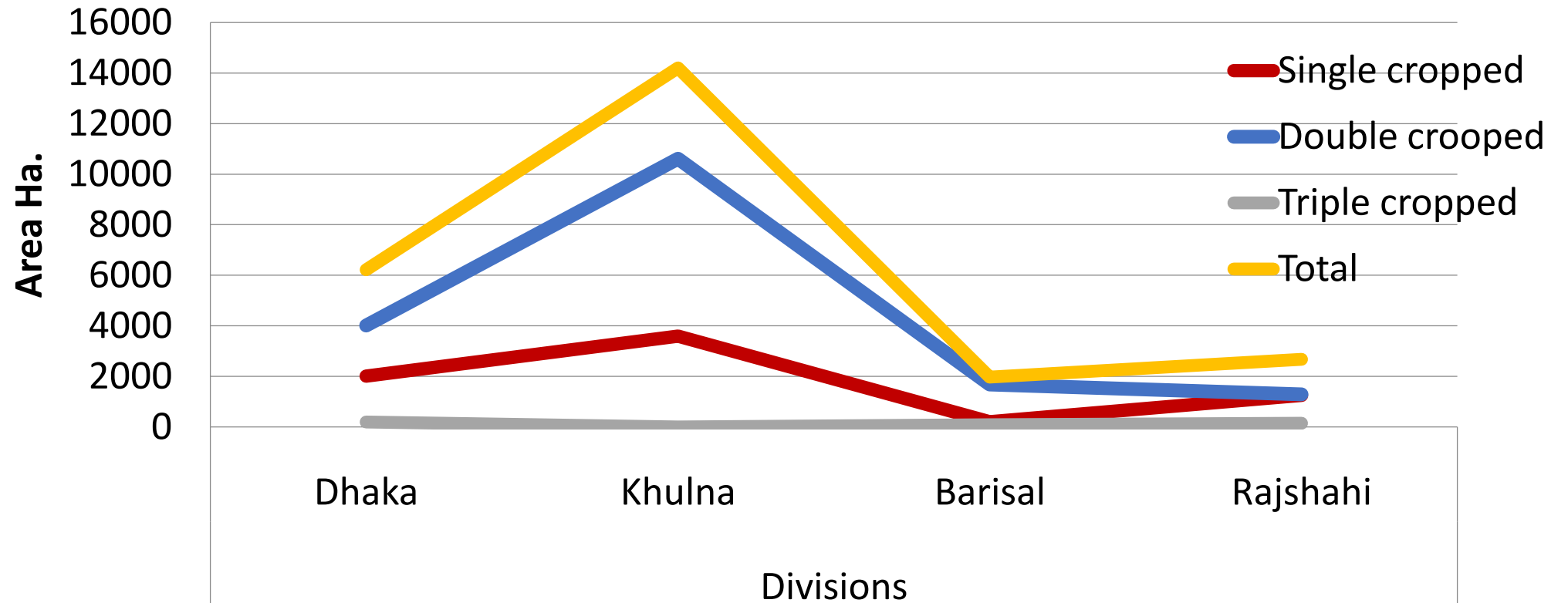
What is the impact of waterlogging?

- Social disruption (school, housing, health, sanitation, markets, women's mobility)
- Clean drinking water supply
- Less opportunities for paid work (reduced cropping, transport disrupted, stifled non-farm activities)
- In agriculture, depressed *Aman* season production; possible reduced yield & returns from *Boro*
- Conversion of crop land to shrimp, but landless/ tenants particularly affected (one source of conflict)

Aman Production in Satkhira, MT



Converted from rice fields to fish ponds, by division and land use, Bangladesh 2006-2011

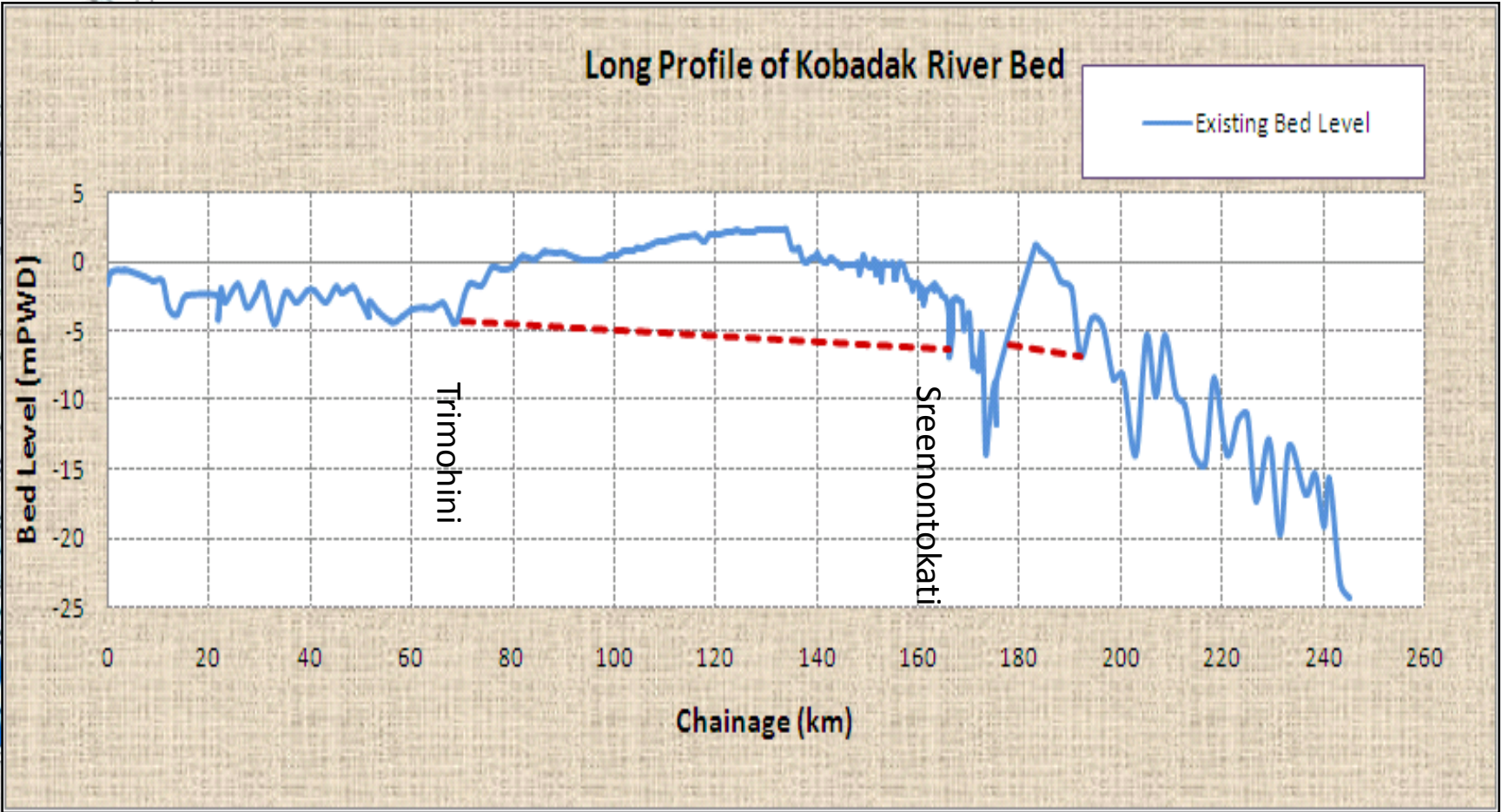
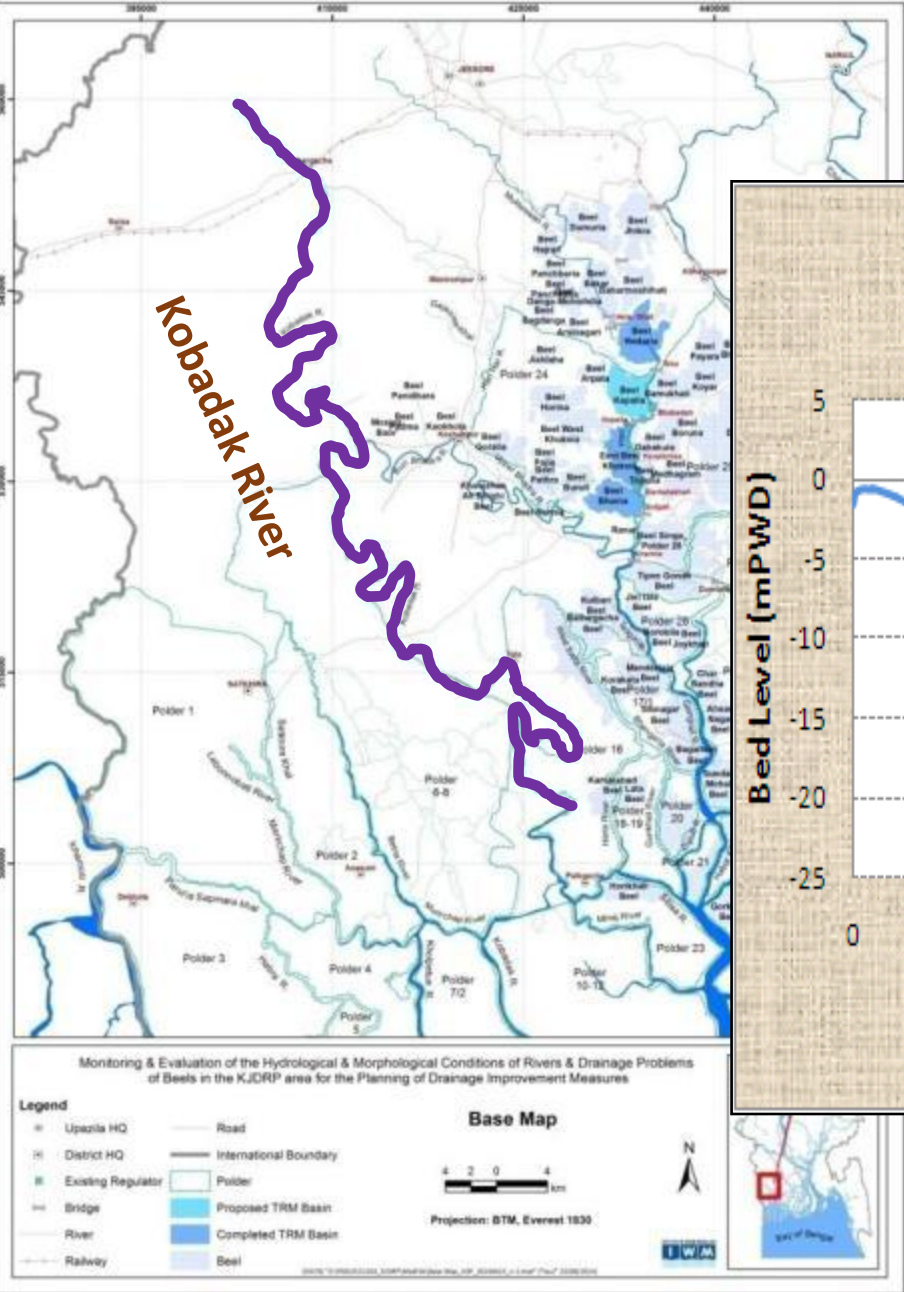


What are the underlying causes of waterlogging?

- Silted up rivers, with river beds higher than polders preventing natural draining out
- Badly planned or executed infrastructure projects (such as roads) which block drainage
- Water infrastructure not being properly maintained
- Aquaculture, and other economic activities which may obstruct drainage

(touches several themes from the Master Plan)

Kobadak Bed Siltation (IWM)



Siltation (Kobadak River)





Infrastructure (narrow bridges,
pipe culvert across the Bhairab
river)



Abandoned *kalashi*
cottage, (location?)





Shrimp Structures obstructs flow

Efforts to prevent waterlogging

- Bangladesh Water Development Board (BWDB) has 7 projects completed/ongoing to improve drainage facilities- excavation of rivers and Tidal River Management (TRM) - BDT 1240 Crore
- LGED - minor infrastructure (roads, culverts bridges etc.),
- Development partners, NGOs with cash-for-work schemes (excavation)

Stakeholder opinion: government organizations:

- Expressed dissatisfaction with public agency (particularly BWDB)
- implemented work is “imposed” and does not have any local level participation
- working relation between GO (BWDB) and NGOs is not conducive to cooperation
- LGED is widely appreciated
- development departments less aware of polder-related issues
- calls for strengthening institutional capacity

Stakeholder opinion: general

- Humanitarian assistance is inadequate, and is not free from bad practices
- Poor oversight results in partial implementation - requiring same thing to be addressed time and again (eg NGO excavation work)
- Some commented that certain interested groups benefit from water logging, and so have less incentive to resolve the situation
- Each blame the other
- Overall, coordination is lacking

Conclusions

- preventing future water-logging will take major effort on several fronts, and needs to be coordinated across different agencies
- preventing water-logging will take some time (TRM schemes take 5-10 years to show results; removal of infrastructure and programmes to improve drainage also)
- meanwhile there is a need for coping strategies – this is where the Ministry of Agriculture may have a role to play

What possible role for the Ministry of Agriculture

- ✓ Promote technologies to address waterlogging constraint (dyke cultivation, use marginal land, salt tolerant/short duration varieties, floating beds, etc) through extension
- ✓ Production intensification of rice aquaculture through sustainable practice
- ✓ Promote technologies to increase availability of locally-produced nutrient dense food
- ✓ NARS (BARI, BRRI, BINA, SRDI, BFRI) maintains number of research stations in the region – these could help dev & disseminating technologies
- ✓ DAE may support greater mechanization as the key to crop intensification in the south (efficient pumping; land preparation; etc)
- ✓ Take projects to scale up small scale agro-processing
- ✓ Identify potential for salt-tolerant fodder and feed, to support small scale livestock feeding

Alternative
livelihood
strategies -
vegetables on
the dyke



Use of
marginal land,
and vertical
gardening



Floating bed vegetables





THANK YOU