



The Impact of Salinity Intrusion

EE551&EE561

in the Mekong Delta region in Vietnam

Group 2

Piangprae	Lertviriyavarangkool	5904640462
Wachirawit	Sittiyarnuruk	5904640728
Patcharaporn	Saisangthong	5904640801
Nutnaree	Kesa	6004640097
Araya	Kanjanakoch	6004640691

H
Y
P
O
T
H
E
S
I
S

IF there were

NO FRESHWATER



in Mekong Delta region

what would be THE EFFECTS ??



SCOPE OF AREA



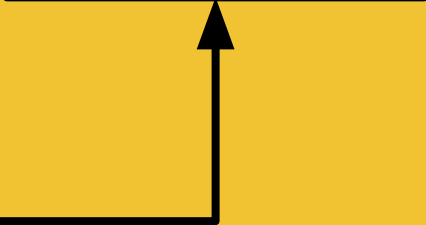
MEKONG DELTA

SCOPE OF AREA

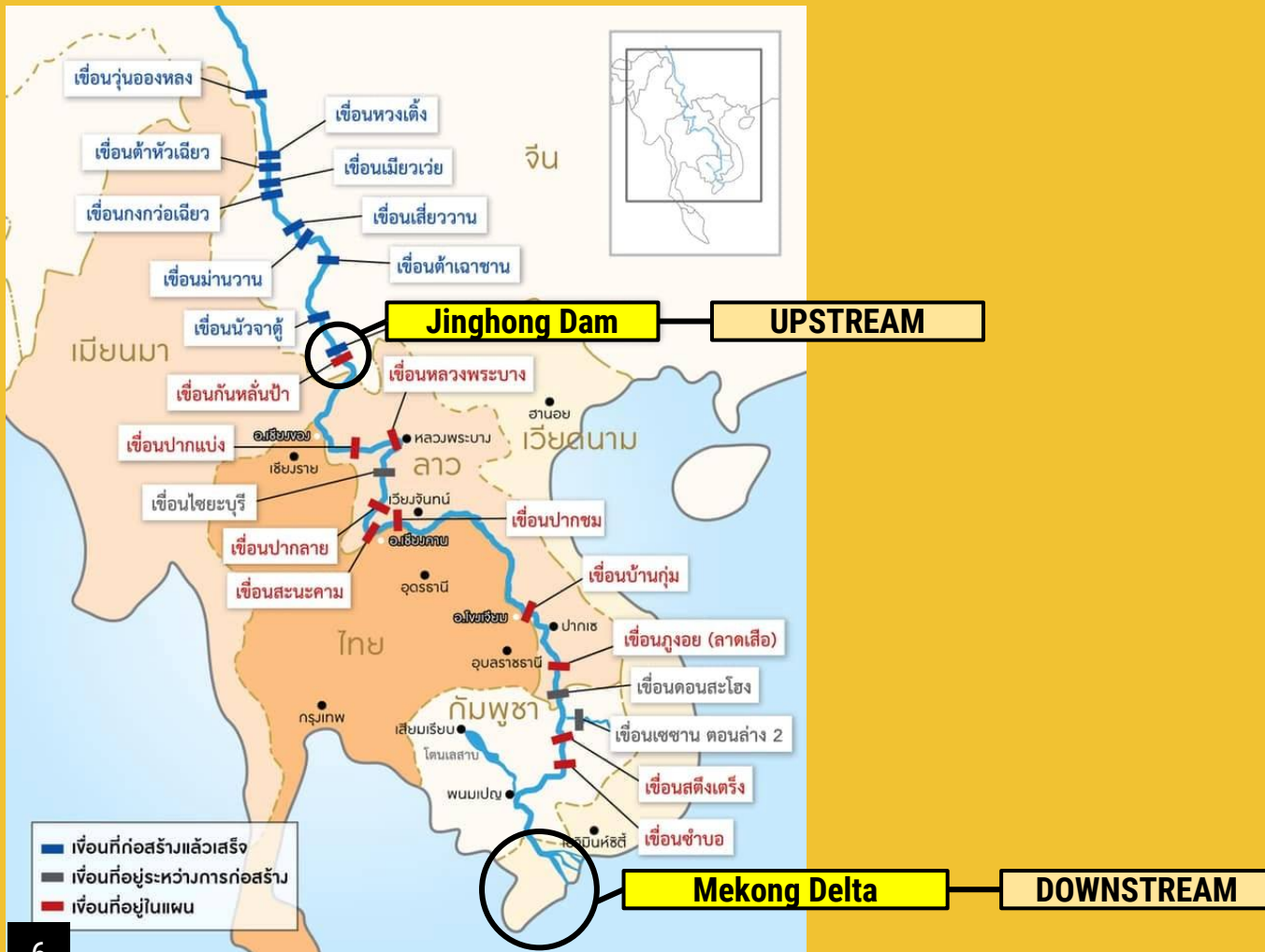


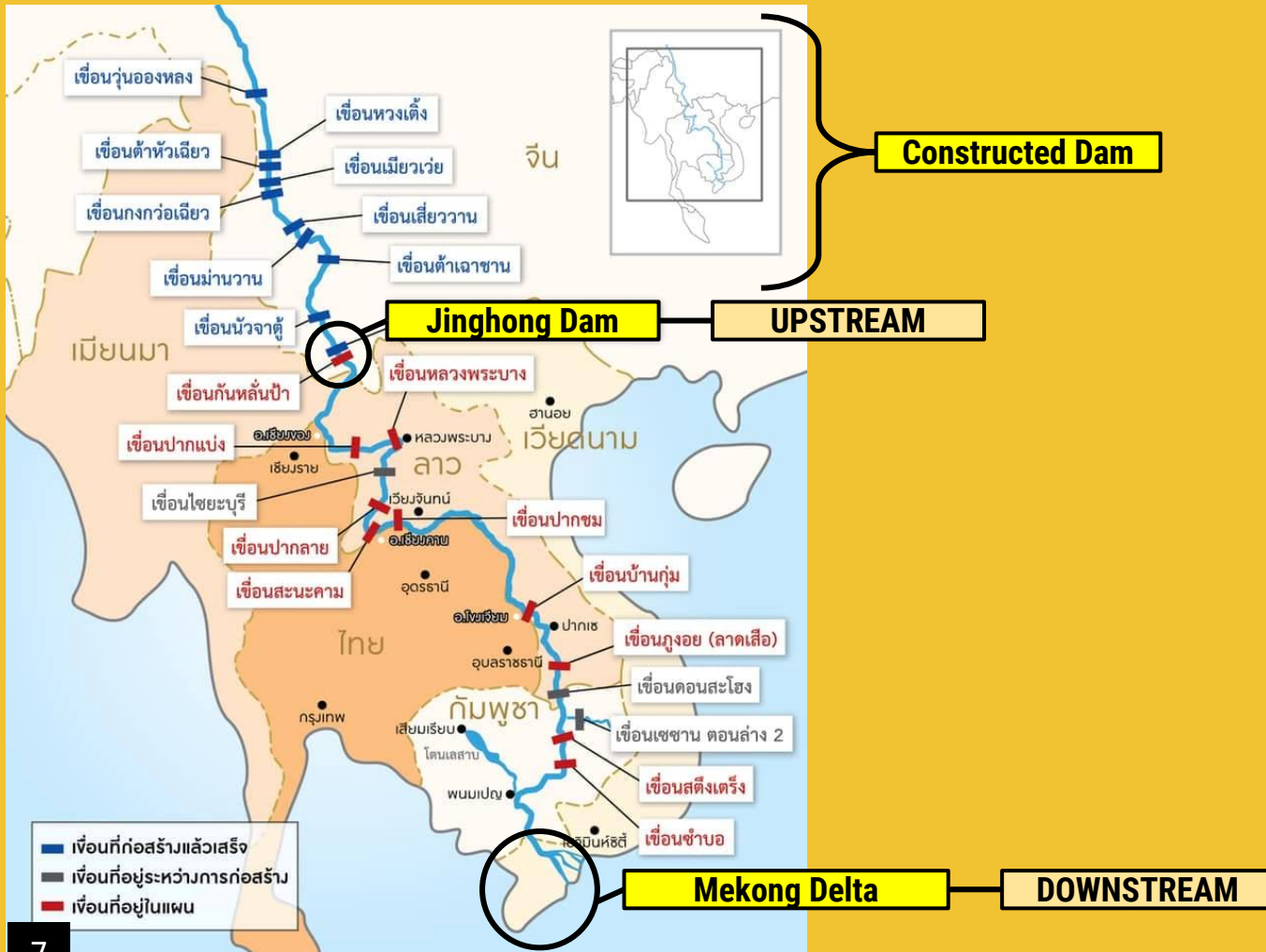
MEKONG DELTA

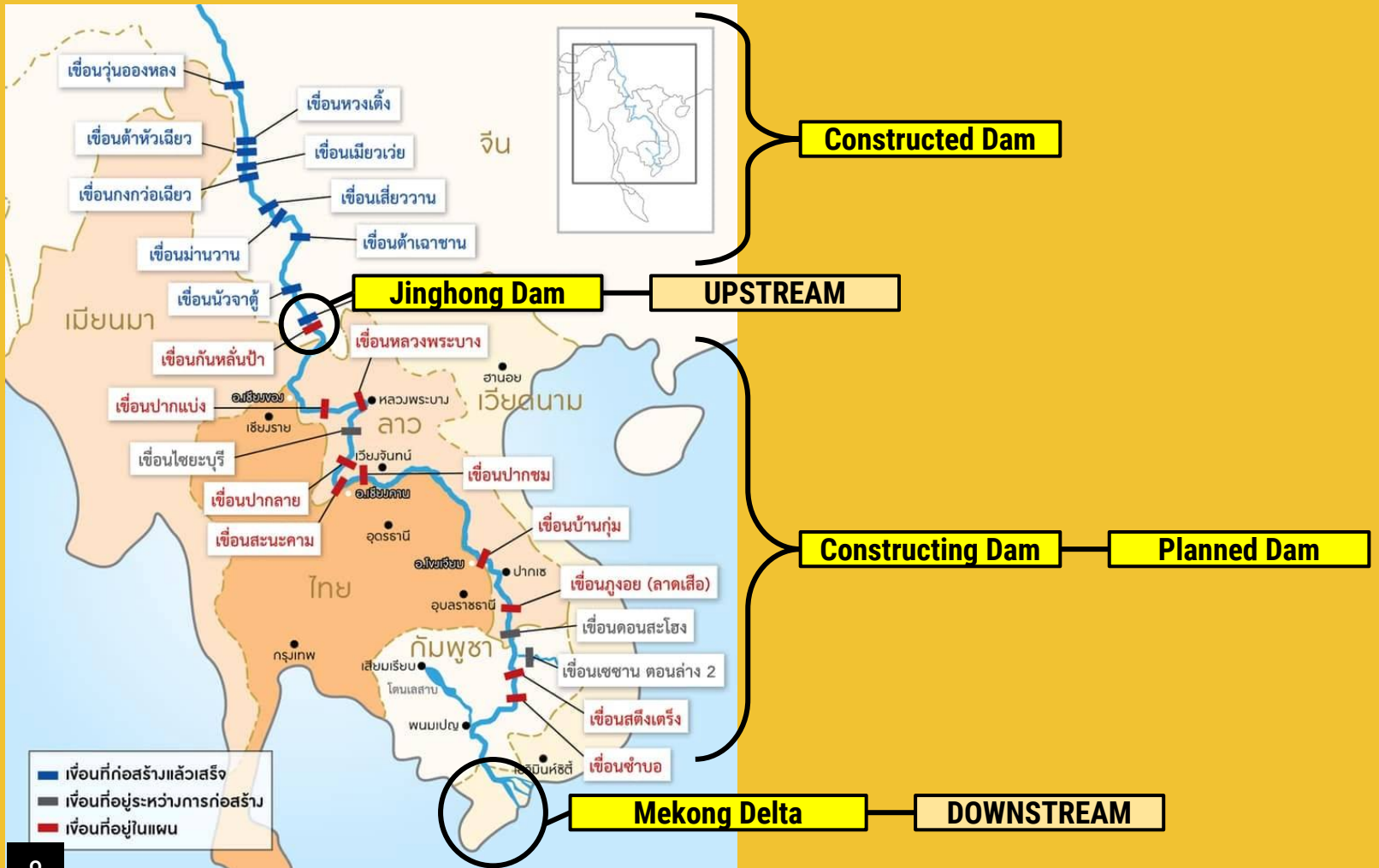
12 provinces



Picture reference : <https://www.nationsonline.org/oworld/map/vietnam-political-map.htm> (Left)
<https://travel.voyagevietnam.co/map-of-regions-of-vietnam/> (Right)









NO RELEASE water from Jinghong dam



NO RELEASE water from Jinghong dam



Low water level in Mekong river



Mekong Delta

DOWNSTREAM



NO RELEASE water from Jinghong dam



Low water level in Mekong river



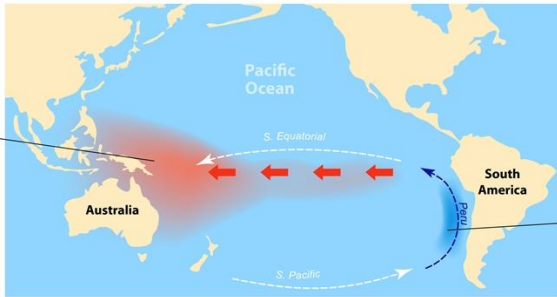
Sea water rise in the river delta



THE EL NIÑO PHENOMENON

NORMAL YEAR

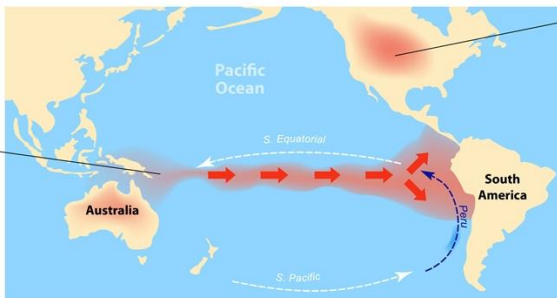
Equatorial winds gather warm water pool toward the west.



Cold water along South American coast.

EL NIÑO YEAR

Easterly winds weaken. Warm water to move eastward.

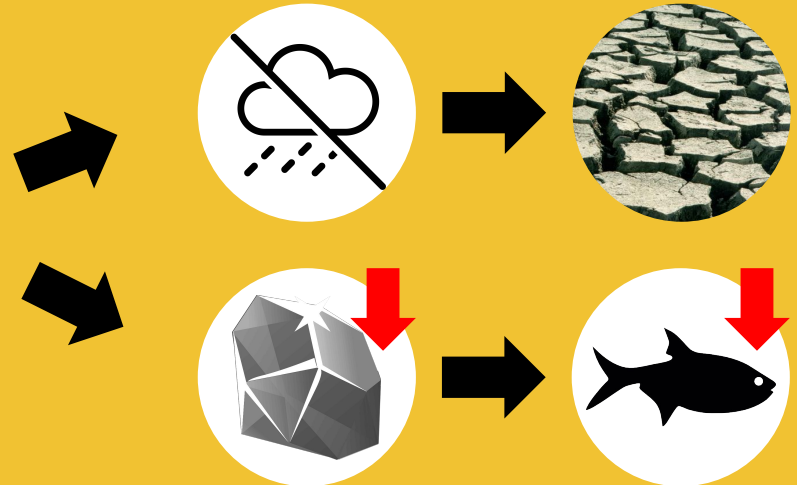


Warmer winter

Natural Phenomenon

Climate change

El Nino





Natural Phenomenon

- **Climate change**
 - ▶ El Nino
 - ▶ Sea level increasing



Natural Phenomenon

Climate change

El Nino

Sea level increasing

Tide situation

Gravity from the moon

P
R
O
B
L
E
M
S

Problem 1

NO RELEASE water from Jinghong dam



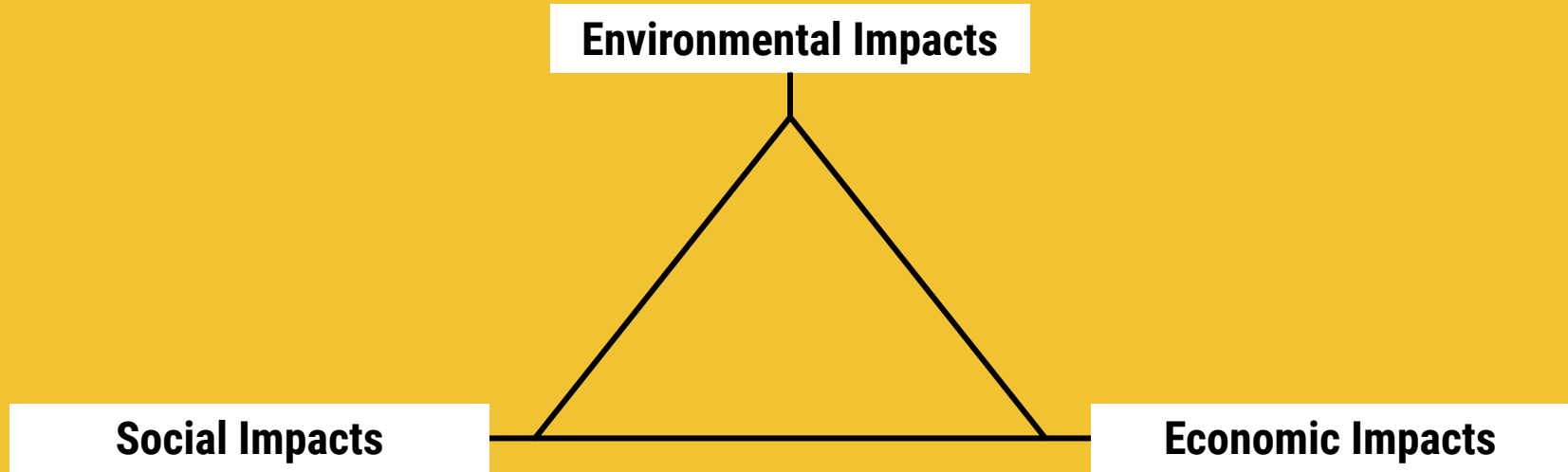
Problem 2

Natural Phenomenon



Sea water rise in the river delta

CONCEPTUAL FRAMEWORK



Environmental changes in the Mekong Delta spell trouble for farmers

by University of Illinois at Urbana-Champaign



Mekong Delta's dams, dikes, and canals have made the area a major exporter of rice, shrimp, and other seafo...

The Mekong Delta is home to 15 million people, many of whom rely on the delta's rich soil and water resources for farming and fishing. But their livelihoods are being threatened by rising sea levels, droughts, dams, and other hydrological shifts. A new article from researchers at the University of Illinois and Iowa State University explains the challenges.

MEKONG COMMONS

ABOUT ▾ DECONSTRUCTING DEVELOPMENT ENVIRONMENTAL JUSTICE BETTER WAYS WOMEN YOUTH

CRITICAL PERSPECTIVES ON ECOLOGY, SOCIETY AND DEVELOPMENT IN THE MEKONG REGION

As salinity intrudes into the Mekong Delta, farmers lose yields and income

Deconstructing Development 2017/06/22



Drought conditions have worsened the salinity problems in Cu Lao Dung district, Soc Trang province. (Photo by Chau My Duyen.)



Sugarcane fields destroyed by saltwater intrusion in Cu Lao Dung district, Soc Trang province in 2015. (Photo by Nhan Dan New.)



FILE - Dried-up rice is seen on a paddy field stri

Mekong Delta Faces Worst Drought in 90 Years

Published on Monday, 22 February 2016 13:34 Written by Saigoneer.



It is not yet the peak of dry season, but the Mekong Delta is experiencing its worst drought in 90 years.



Mekong Delta during the flood season

People in the Mekong Delta region of Vietnam are busy fishing when the flooding season has come.

On the fields of An Giang Province's Phu Hoi Commune, nets have been laid to catch fish, crabs and snakes.

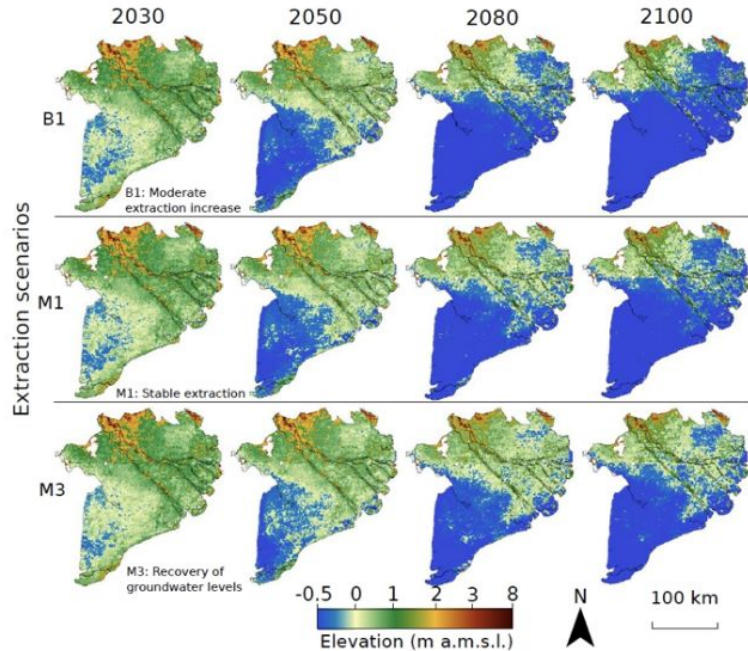
Huynh Van Tai, a local resident who has much experience in fishing during the flooding season, said that this year the flooding arrived earlier than expected so many people had not yet prepared for the work.

Bui Thi Suong in Dong Thap Province's Hong Ngu District said that earlier, his family earned bigger income from fishing on the flooding season. She even hired dozens of workers for the work. However, in recent years, the seafood source has much decreased.

These days, she and her husband are taking advantages of the flooding season to catch some fish for sales in the market.

Some photos of the busy farmers in the Mekong Delta region in the flooding season:

Extraction-induced subsidence + absolute SLR + natural compaction



Researchers found that unless drastic policy
action

Huge Land Loss Predicted for Vietnam's Mekong Delta

By David Boyle
February 16, 2019 02:45 AM



FILE - This picture taken on March 2, 2016 shows farmers putting dry paddy into bags for sale in Vi Thuy, in the southern Mekong delta province of Hau Giang.

In dry season, the delta is impacted by salinity intrusion and tides

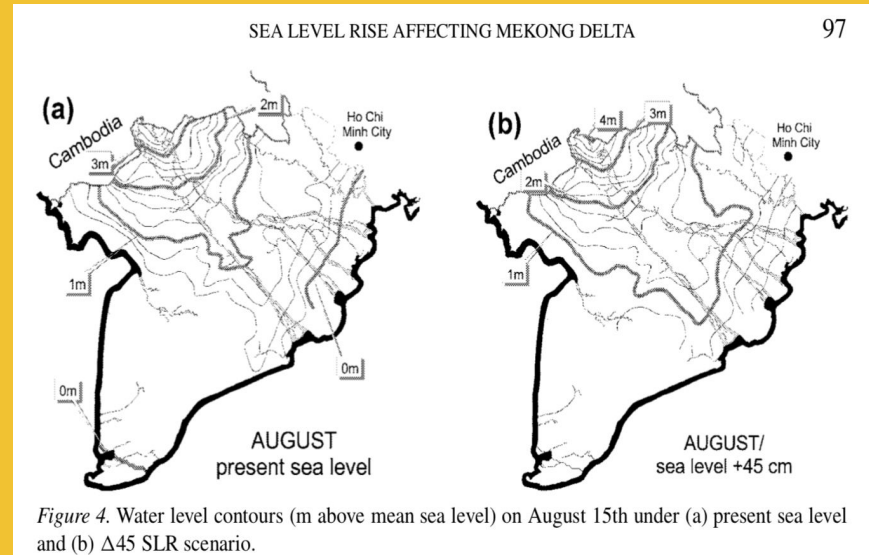
In wet sea, flooding problem happens

The flood levels in Mekong delta, which depend on impacts of

- ! High river flows**
- ! Storm surges**
- ! Sea level rise**
- ! Future siltation of Mekong Estuary from the construction of dams in China and other dams**

The bulk of the land in the VMD is only slightly (<2 m) above mean sea level

The Mekong Delta has experienced devastating floods by water from the Mekong river, e.g., in September/October 2000, leading to huge economic losses in the agricultural sector. These losses could substantially exacerbate under sea level rise (SLR).



Salinity intrusion in 2000

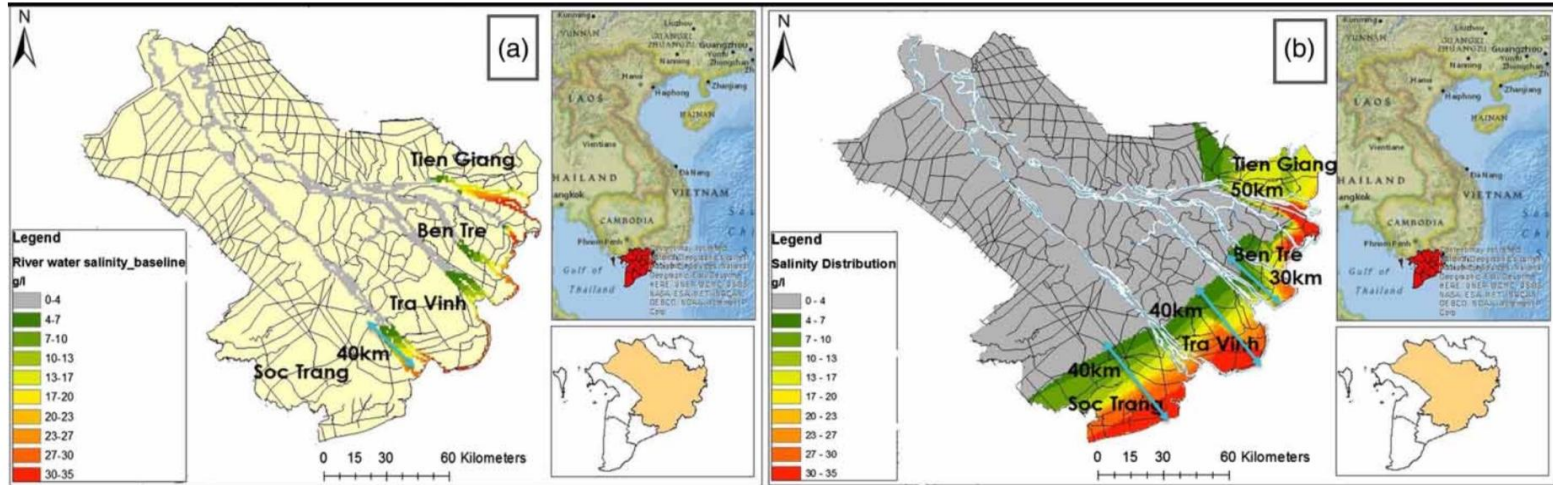


Figure 4 | The spatial distribution of salinity in the river (a) and in the basin of MKD (b) in 2000.

Salinity intrusion in 2050

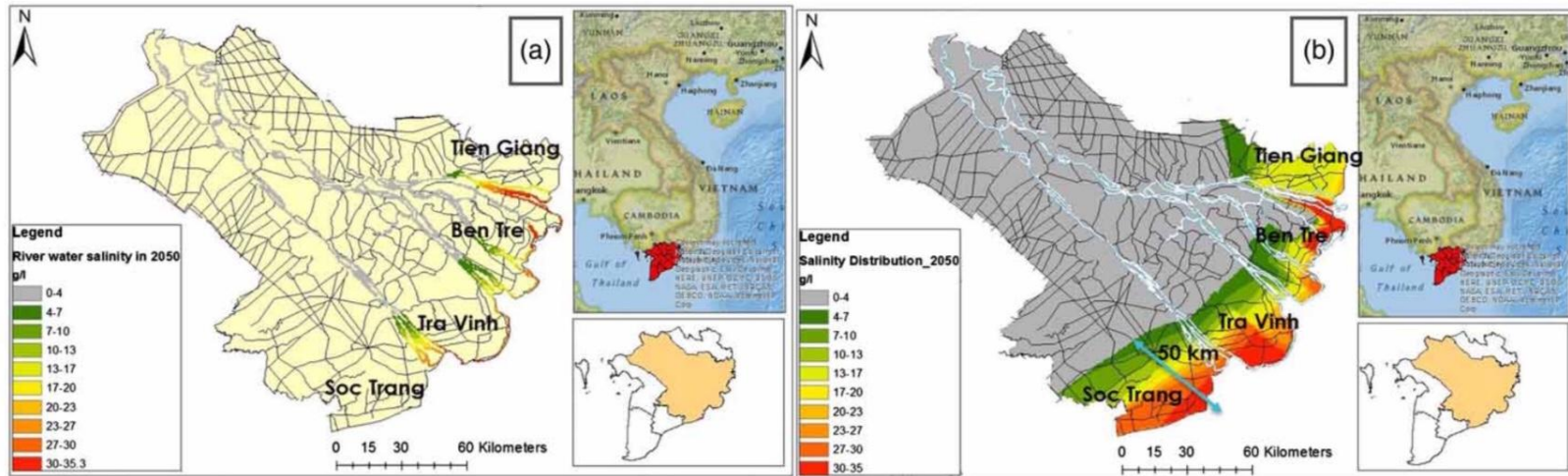


Figure 6 | The spatial distribution of salinity in the river (a) and in the basin of MKD (b) in the dry season 2050

Period 2020 - 2100

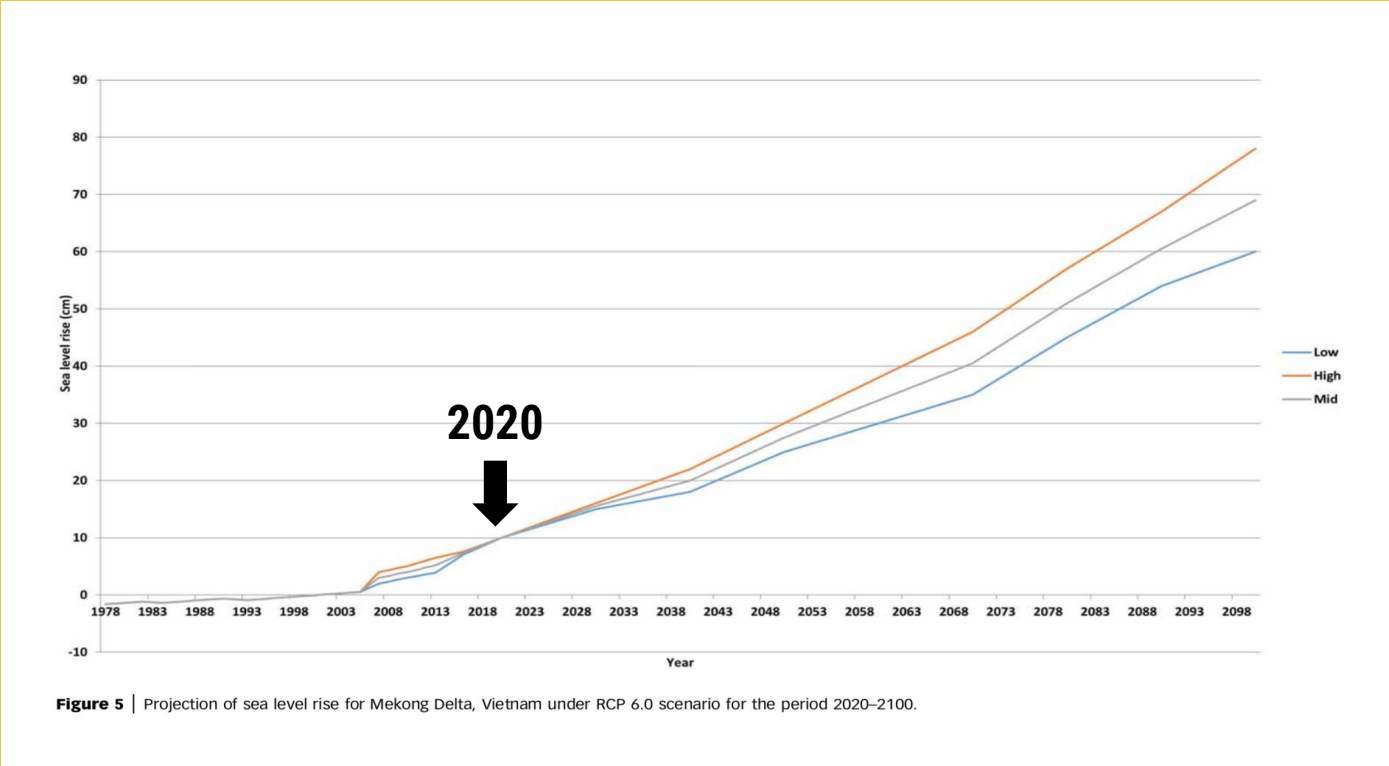
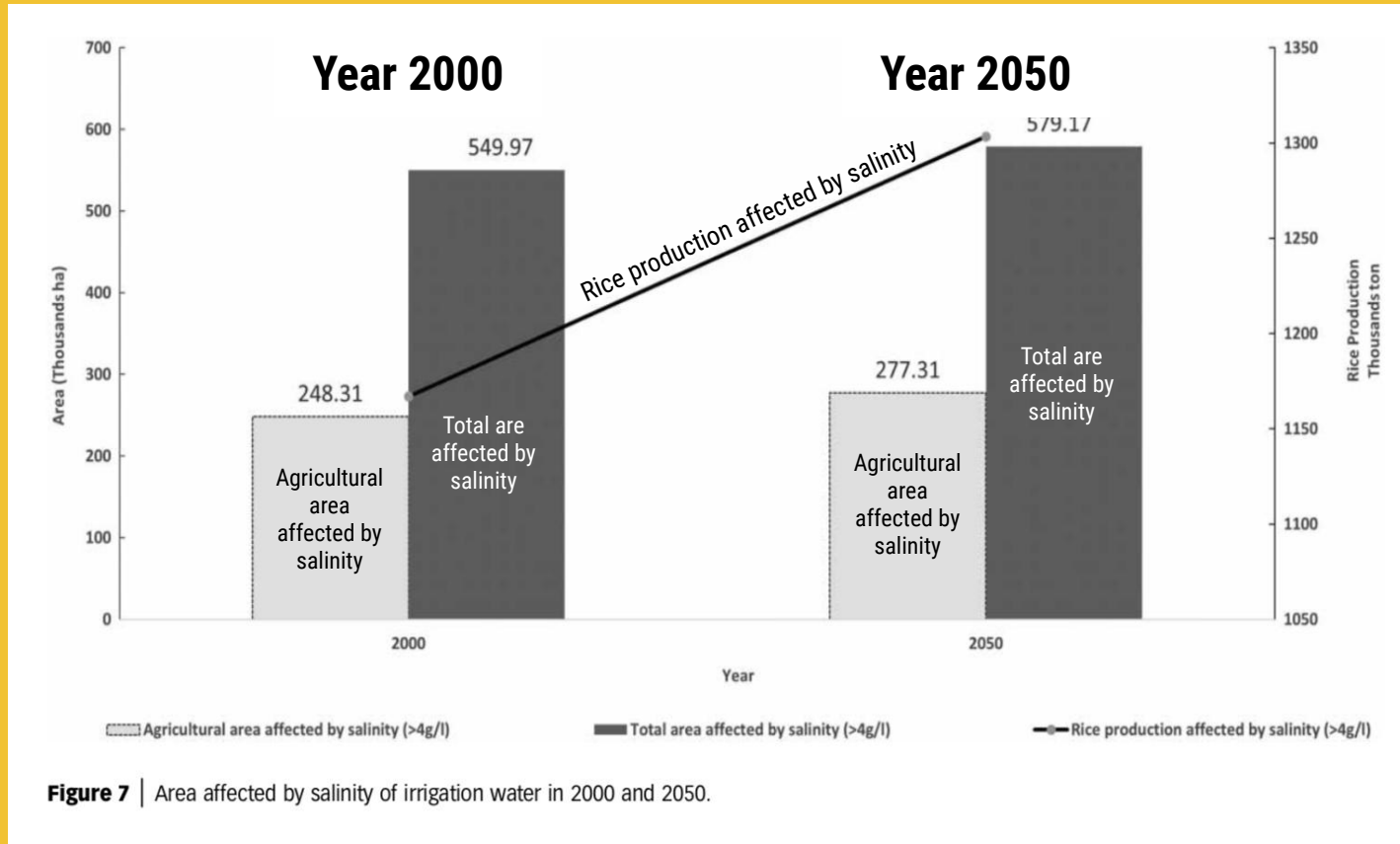
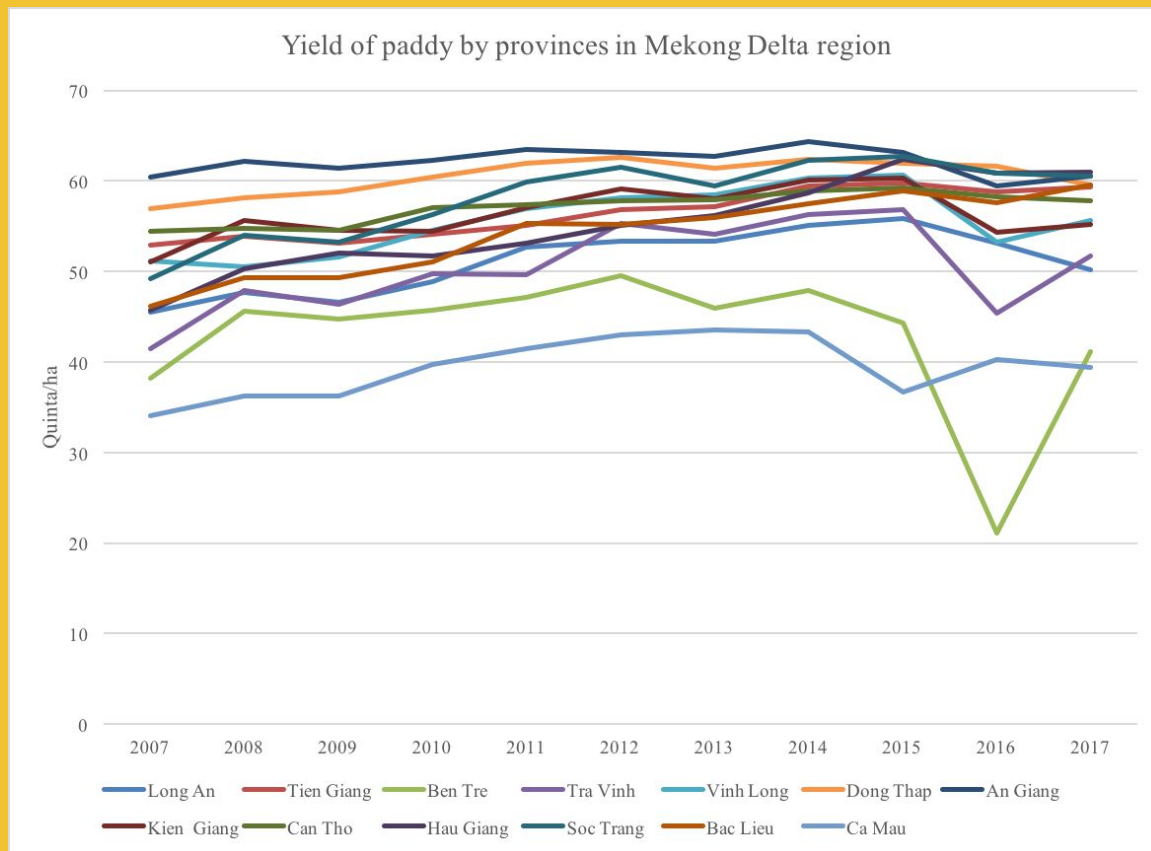


Figure 5 | Projection of sea level rise for Mekong Delta, Vietnam under RCP 6.0 scenario for the period 2020–2100.



Yield of paddy production in Mekong Delta



Yield of paddy production in Mekong Delta

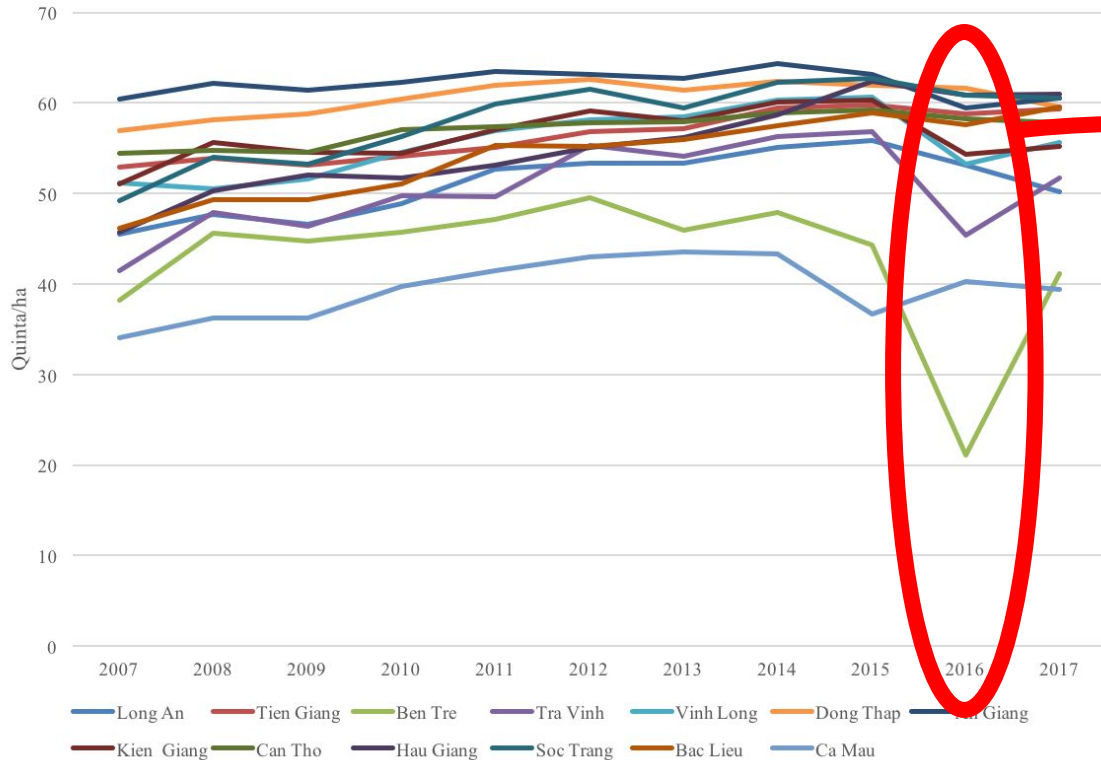


Yield of paddy production in Mekong Delta

ENVIRONMENTAL IMPACTS

CONCEPTUAL FRAMEWORK

Yield of paddy by provinces in Mekong Delta region



Flash News

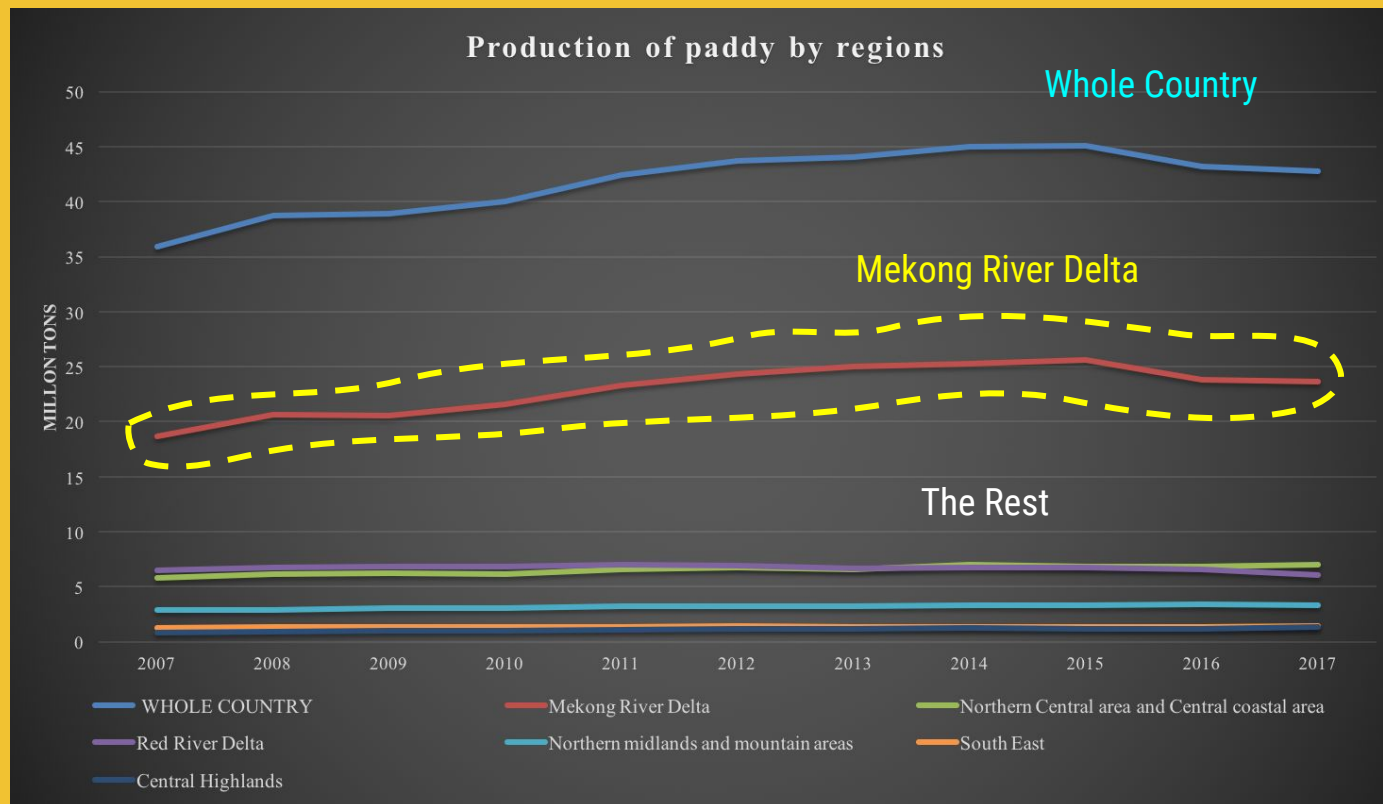
เอล-นีโญทำเวียดนามแห้งหนักในรอบ 90 ปี

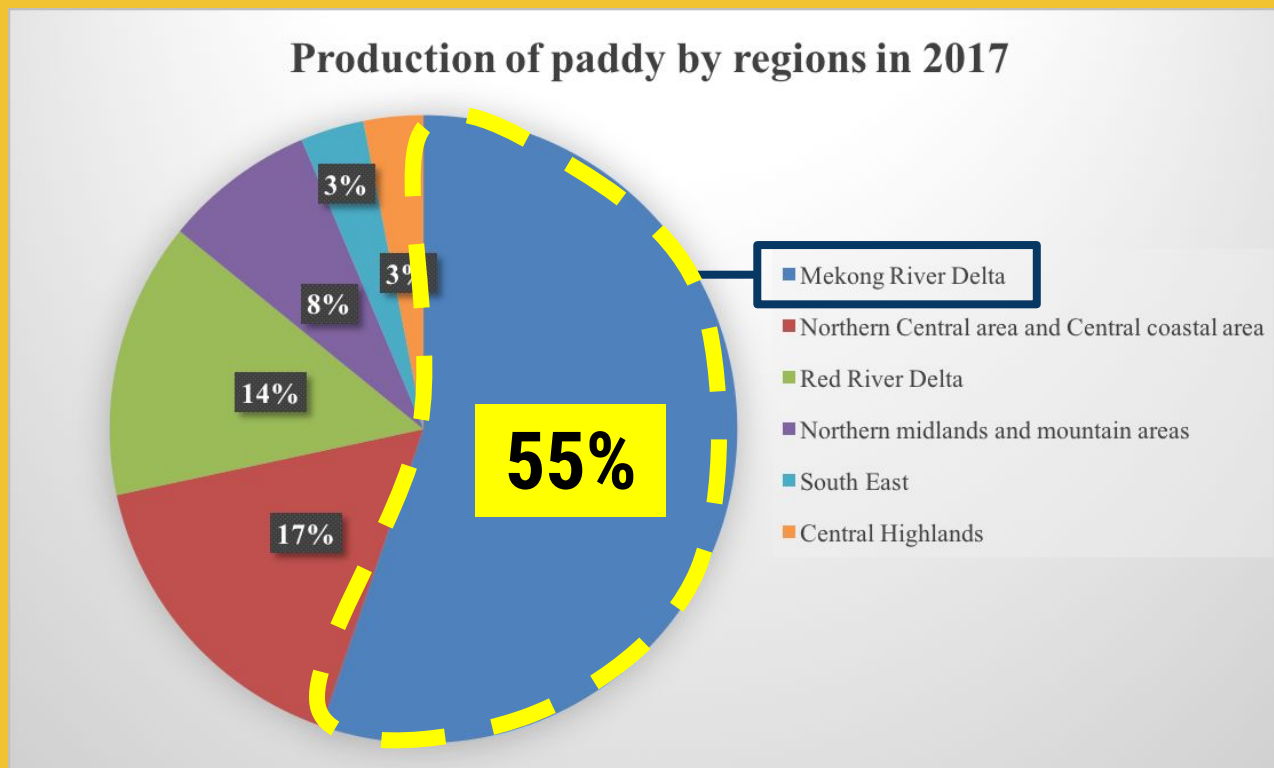
เวียดนามกำลังเผชิญกับภาวะแห้งแล้งรุนแรง ประชาชน 1 ล้านคนต้องได้รับความช่วยเหลือด้านอาหารโดยเร่งด่วน และ 2 ล้านคนขาดแคลนน้ำดื่ม

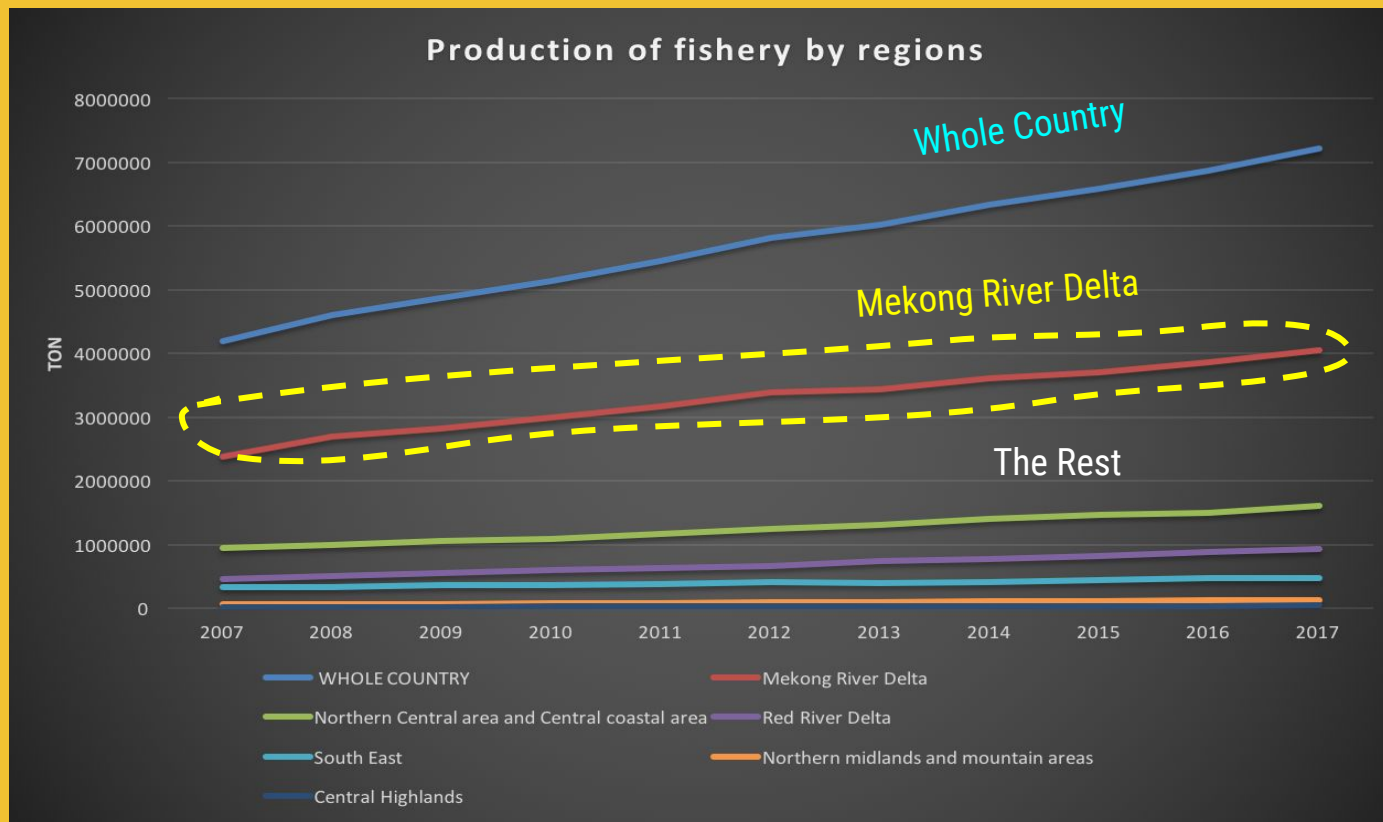
จันทร์ที่ 20 มิถุนายน 2559 เวลา 21.59 น.



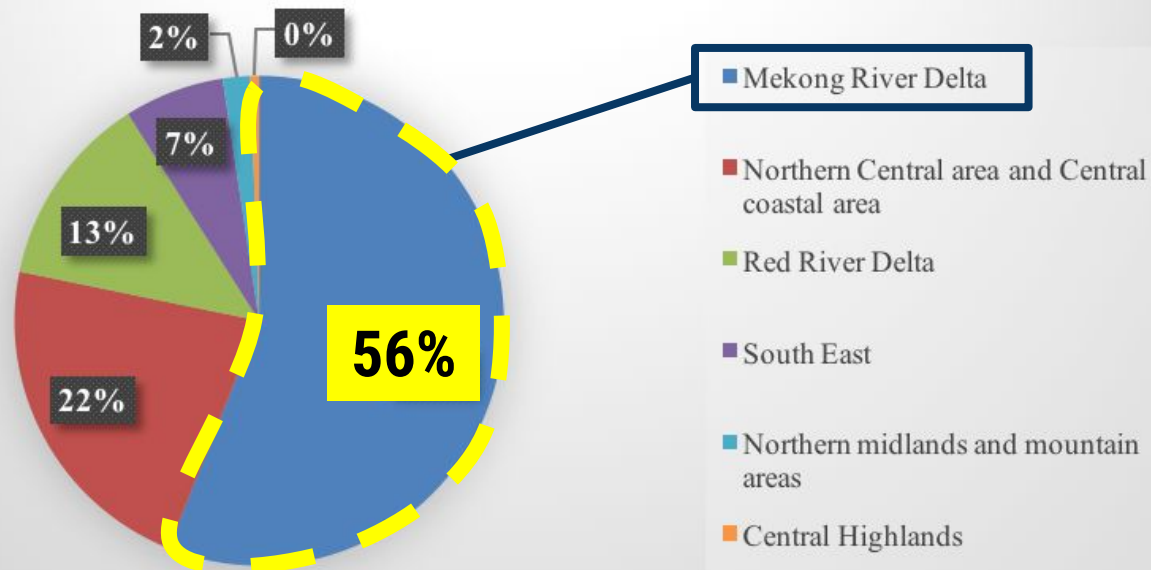
Sources : https://www.gso.gov.vn/default_en.aspx?tabid=778
<https://www.dailynews.co.th/foreign/503883>








Production of fishery by regions in 2017



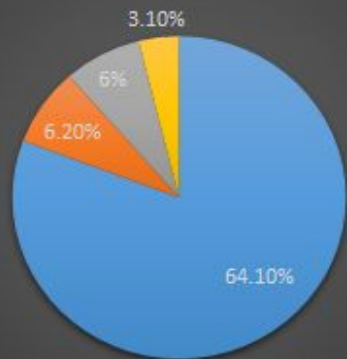
List of rice exporters



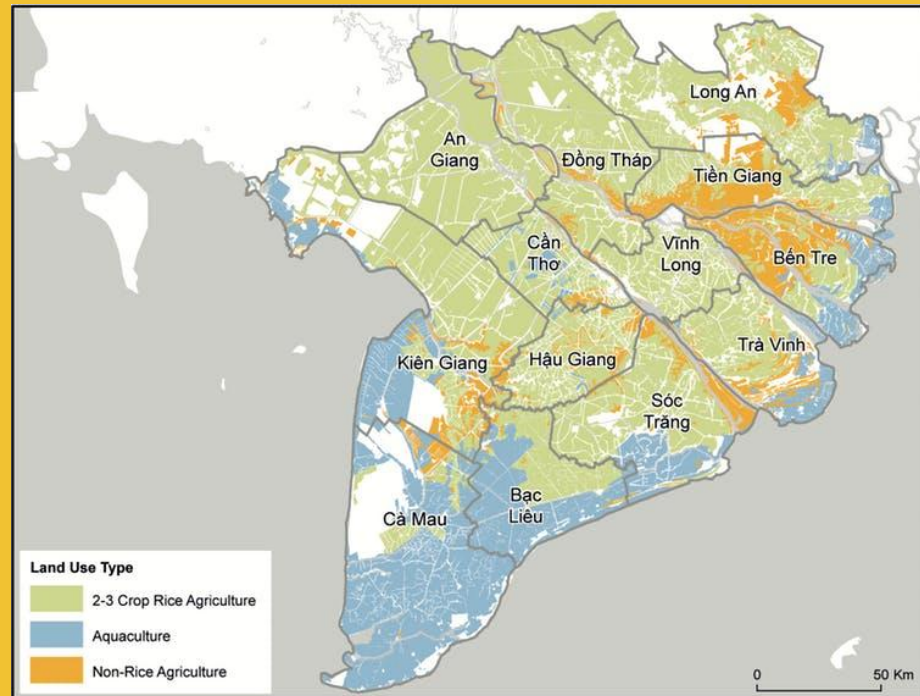
Rank	Exporter	2018 Rice Exports	%World Total
1.	India	\$7.4 billion	30.1%
2.	Thailand	\$5.6 billion	22.7%
3.	Vietnam	\$2.2 billion	9%
4.	Pakistan	\$2 billion	8.2%
5.	United States	\$1.7 billion	6.9%
6.	China	\$887.3 million	3.6%
7.	Italy	\$614.1 million	2.5%
8.	Brazil	\$467.9 million	1.9%
9.	Uruguay	\$400.2 million	1.6%
10.	Cambodia	\$375.2 million	1.5%

Proportion of land usage in Mekong delta & Cultivation area map

Structure of used land by province - Mekong delta (December 2017)

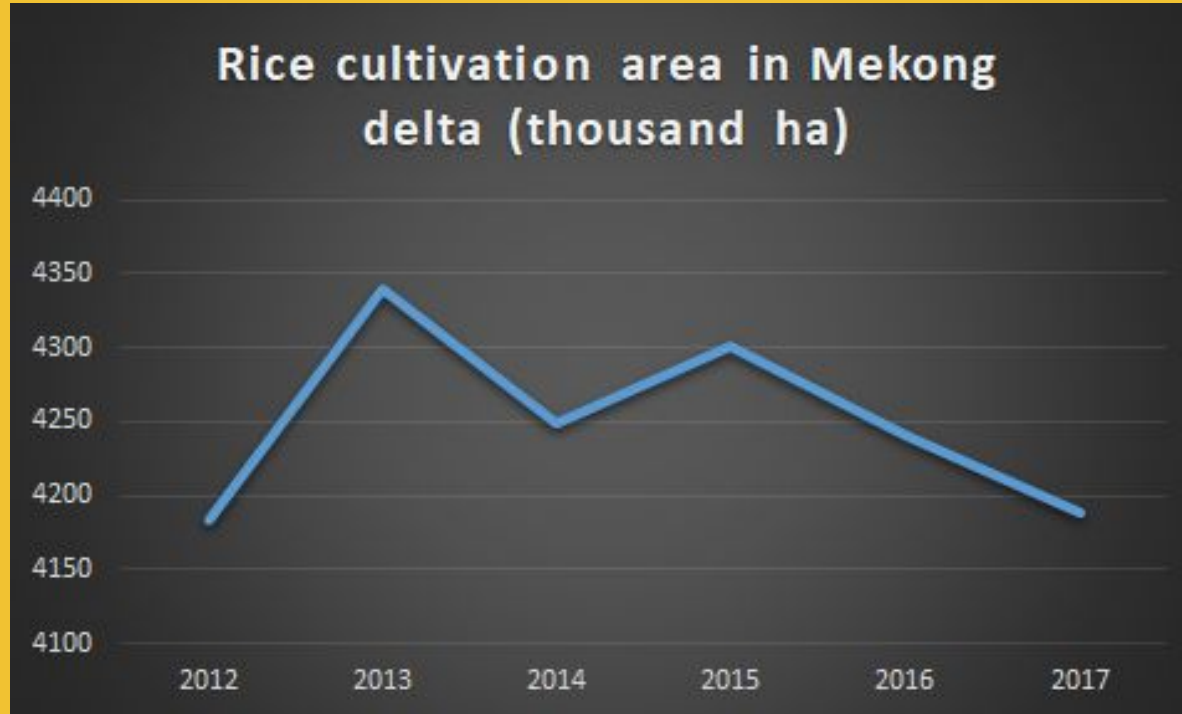


- Agricultural production land
- Forestry land
- Specially used land
- Homestead land



Sources :

https://www.gso.gov.vn/default_en.aspx?tabid=515&idmid=5&ItemID=19294 - table 4
<https://theconversation.com/climate-change-is-triggering-a-migrant-crisis-in-vietnam-88791>









Less agricultural production, less supply of food

Change in employment structure

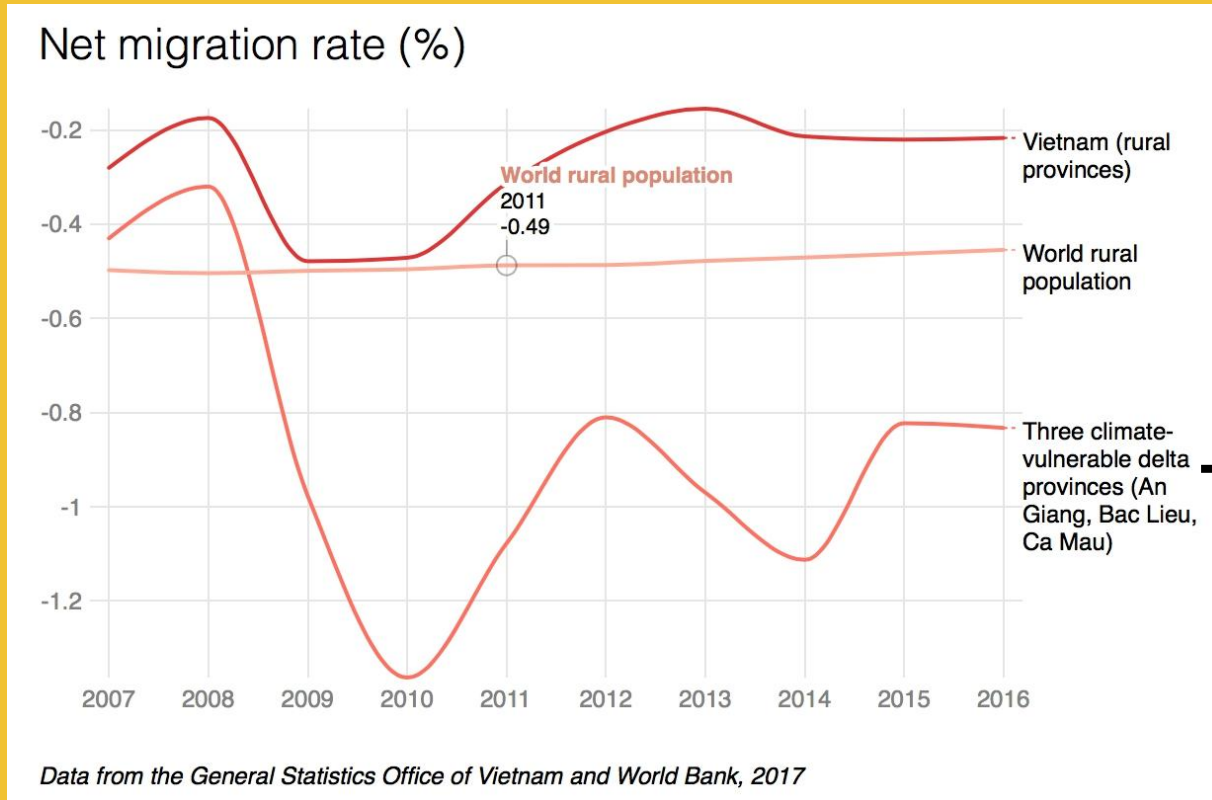
! Farming

! Fishery along Mekong river

Urban migration

Increased vulnerability of poor and near poor households due to less income

Reduced available income to invest in education and other household assets



1.7 Million left
700,000 arrived



Thank you *x 3 times*

THANK YOU



Group 2

Piangprae	Lertviriyavarangkool	5904640462
Wachirawit	Sittiyarnuruk	5904640728
Patcharaporn	Saisangthong	5904640801
Nutnaree	Kesa	6004640097
Araya	Kanjanakoch	6004640691