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# **ASSESSING IMPACTS OF SALTWATER INTRUSION ON SOCIAL GROUPS IN THE COASTAL AREAS OF MEKONG DELTA AND PROPOSING AMENDMENTS AND IMPROVEMENTS TO SOCIAL SECURITY POLICIES**



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## 1. Context

Climate change is one of the greatest challenges faced by humanity in the 21<sup>st</sup> century, seriously affecting production, human life, and environment on a global scale. Vietnam is a developing country whose greenhouse gas emissions are still low compared to the average rate of the world<sup>1</sup>. However, Vietnam is said to be one of the ten countries most affected by climate change<sup>2</sup>. Climate change manifests through extreme and anomalous weather phenomena such as rising temperatures, strong storms, heavy rains, floods, droughts and rising sea levels, etc. which have been becoming more popular in recent years in Vietnam. According to the 2016 climate change scenario, by 2100, the average sea level for the entire coastal strip of Vietnam will increase by 44-73cm<sup>3</sup>. If the sea level rises by 100cm, about 16.8% of the Red River Delta area, 4.79% of Quang Ninh province's area will be at risk of being flooded; about 1.47% of the land area of the Central Coastal provinces from Thanh Hoa to Binh Thuan will also be at risk of being flooded. In particular, Thua Thien – Hue province will have the highest risk (7.69% of its total area); about 17.8% of Ho Chi Minh City's area, about 4.79% of Ba Ria – Vung Tau province's area will be at risk of being flooded; the Mekong Delta will be at high risk of being flooded (38.9% of the total area)<sup>4</sup>. Currently, the cultivated land area of Vietnam is about 9.4 million ha, of which 4 million ha is for rice cultivation. If the sea level rises by 1m, Vietnam will lose more than 2 million ha of rice cultivation area (about 50%<sup>5</sup>. It means that we will lose production land and livelihoods for people. According to the research report on vulnerability to climate change by DARA International in 2012, climate change can cause damage to Vietnam which costs USD15 billion per year, equivalent to about 5% of GDP of the country. If Vietnam has no timely response solutions, the damage caused by climate change is estimated to reach 11% of GDP by

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<sup>1</sup> Estimated rate of greenhouse gas emissions per capita in 2010: The US: 21.6 tonnes of CO<sub>2</sub>/person; Europe: 11 tonnes of CO<sub>2</sub>/person, the average rate of the world: 5 tonnes CO<sub>2</sub>/person; Vietnam: 1.6 tonnes of CO<sub>2</sub>/person. Source: Ministry of Natural Resources and Environment, *National Environmental Report 2010*, page 29, Website: [Http://vea.gov.vn](http://vea.gov.vn).

<sup>2</sup> Ministry of Natural Resource and Environment. 2016. *Climate change and sea level rise scenarios for Vietnam*. Hanoi: Vietnam Publishing House of Natural Resources, Environment and Cartography. Page 4.

<sup>3</sup> Ministry of Natural Resource and Environment. 2016. *Climate change and sea level rise scenarios for Vietnam*. Hanoi: Vietnam Publishing House of Natural Resources, Environment and Cartography. Page 67.

<sup>4</sup> Ministry of Natural Resource and Environment. 2016. *Climate change and sea level rise scenarios for Vietnam*. Hanoi: Vietnam Publishing House of Natural Resources, Environment and Cartography. Page 75.

<sup>5</sup> Tran Tho Dat, Dinh Duc Truong, and Vu Thi Hoai Thu. 2016. "Climate change impact on Vietnamese economy." *Centre for Quantitative Research* (<http://nghienghiên cứuuudinhluong.com/tac-dong-bien-doi-khi-hau-den-kinh-te-viet-nam/>). Visited on January 15, 2020.

2030<sup>6</sup>. Thus, it is necessary to implement climate change impact assessment on livelihoods, socio-economic losses, and people's health.

According to statistics of the Institute for Workers and Trade Unions, by the end of 2016, the group classified as disadvantaged workers included approximately 13 million people, of whom there were 4.2 million workers with disabilities, 6.5 million poor workers, 180,000 HIV-infected workers, 190,000 workers with drug addiction or prostitution, etc. 80% of the disadvantaged worker group lived in rural area and had poor educational levels. 21.81% of the workers were illiterate, most of whom did not receive any vocational training, and over 40.1% had never worked before<sup>7</sup>. That was not a small number in labor force of the country (accounting for 25% of the labor force). Moreover, Vietnam had up to 80% disadvantaged workers who were vulnerable and concentrated in rural area where production was mainly based on natural, environmental and climatic conditions. Thus, climate change impact assessment on production, employment, income, daily life, and health of vulnerable groups such as poor people, ethnic minority people, people with disabilities, women, children, migrant workers, informal workers, unemployed people, and people with extremely difficult backgrounds is very necessary in order to provide solutions and social policies to support them to ensure security in the context of climate change impacts in general and Saltwater intrusion in particular.

## **2. Research design**

### **2.1 Research objectives**

#### **2.1.1 Overall objective**

The overall objective of the research is to identify socio-economic problems caused by climate change and social groups affected by climate change (with a focus on Saltwater intrusion), from which to assess the impacts of saltwater intrusion on

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<sup>6</sup> Tran Tho Dat, Dinh Duc Truong, and Vu Thi Hoai Thu. 2016. "Climate change impact on Vietnamese economy." Centre for Quantitative Research (<http://nghienghiên cứuuudinhluong.com/tac-dong-bien-doi-khi-hau-den-kinh-te-viet-nam/>). Visited on January 15, 2020.

<sup>7</sup> See, Phuong Minh. 2017. "Finding sustainable livelihood solutions for disadvantaged workers in Vietnam." Dan Sinh E-newspaper (<https://baodansinh.vn/giai-phap-nao-tim--ke-ben-vung-cho-nhom-lao-dong-yeu-the-o-viet-nam-64222.htm>). Visited on October 14, 2021.

social security and propose solutions to amend social security policies towards sustainable development goals.

### ***2.1.2 Specific objectives***

To achieve the overall objective, the following specific objectives need to be achieved.

- Collecting data and evidence to identify problems and groups affected by climate change; thereby assessing and analyzing climate change impact (focusing on saltwater intrusion) on social security (employment, poverty reduction, social assistance, social insurance, and access to social basic services).
- Implementing overall analysis of policies on employment, poverty reduction, social assistance, social insurance, and access to social basic services, and identifying shortcomings and limitations of those policies in the context of climate change impacts.
- Proposing to amend social security policies towards sustainable development in the context of increasingly unpredictable climatic conditions.

### ***2.2 Analytical framework***

To achieve the above objectives, the research is based on the following analytical framework to determine the logic of research implementation and orientation of research contents.

The analytical framework (Figure 1) determining the logic of research implementation and orientation of research contents is as followed.

***First***, the analytical framework orients the implementation of the contents to achieve the first objective of the research which is to identify problems and groups affected by climate change; thereby assessing and analyzing climate change (saltwater intrusion) impact on social security.

In particular, climate change is considered through one of the most obvious and remarkable manifestations which is saltwater intrusion in the Mekong Delta. The impacts of saltwater intrusion on groups of people whose livelihood activities are rice farming, fruit tree planting, aquaculture will be considered. They are three main livelihoods in the Mekong Delta directly affected by saltwater intrusion.

Among households doing rice farming, fruit tree planting and aquaculture, the disadvantaged/vulnerable group is the target group of social security policies which will be further analyzed. They include: 1/Poor people, 2/Ethnic minority people, 3/Women, 4/Migrant workers, 5/Unemployed workers. They are five out of nine social disadvantaged/vulnerable groups which are also the target groups of social security policies. They comprises: 1/Poor people, 2/Unemployed workers, 3/People with disabilities, 4/Ethnic minority people, 5/Women, 6/Children, 7/Migrant workers, 8/Informal workers, and 9/People with extremely difficult backgrounds.

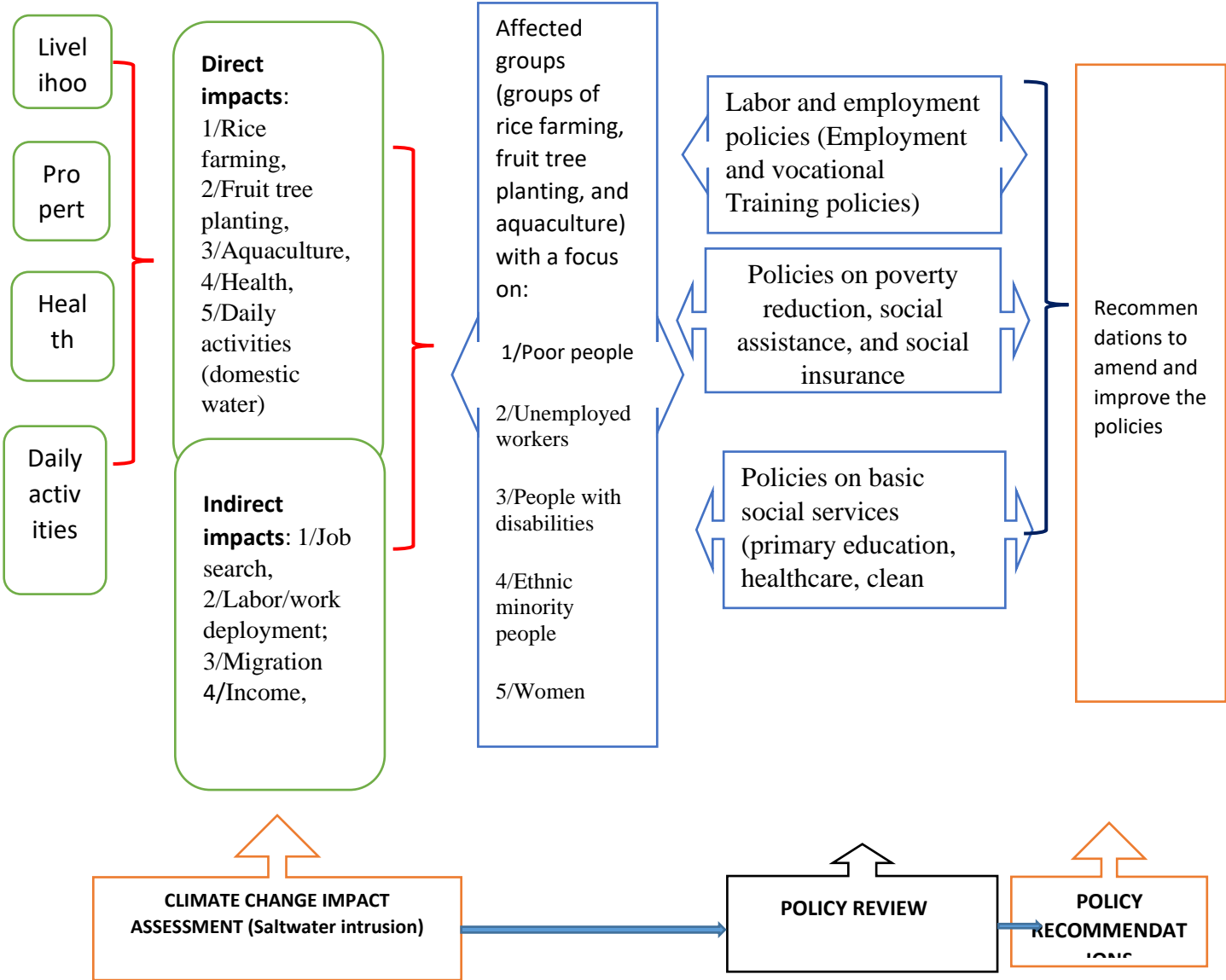


Figure 1: Research Framework Diagram



The climate change (saltwater intrusion) impact assessment on these social sub-groups will be considered in four aspects: 1/Livelihood (including production, employment, income), 2/Health and 3/Daily activities (including water security). The saltwater intrusion impact assessment on the three aspects will consider two types of impacts: direct and indirect. Direct impacts include impacts of saltwater intrusion on productivity, yield, quality of products, through which it affects income, profits and employment of households doing: 1/rice farming, 2/fruit tree planting, 3/aquaculture, and their 4/health, 5/daily activities (domestic water). Indirect impacts include the impacts of saltwater intrusion on: 1/job search, 2/labor/work deployment of workers who participate in the value chain of rice, fruit trees, and aquatic products but are not farmers, and 3/income.

With such orientation of the analytical framework, the contents deployed to achieve the first objective are: impacts of saltwater intrusion on: 1/rice farming, fruit tree planting, and aquaculture; 2/employment (job search and work deployment); 3/income; 4/health; 5/daily activities.

**Second**, the analytical framework orients the implementation of contents to achieve the second object which is the overall assessment of the social security policies (policies for employment, poverty reduction, social assistance, social insurance, and access to basic social services), shortcoming, limitations and policy gaps in supporting groups affected by climate change (saltwater intrusion). The policies are divided into three categories: 1/The group of labor and employment policies (Employment and vocational training policies); 2/The group of poverty reduction, social assistance, and social insurance policies; 3/The group of social basic service policies (primary education, health care, clean water). These are the second specific content of the research.

**Third**, the analytical framework orients the implementation of the contents to achieve the third objective which is to propose to amend some social protection policies based on climate change (saltwater intrusion) impact assessment of a number of specific dimensions (socio-economic problems) on some social groups considered the target groups of social security policies. Recommendations are given to emphasize amendments to three categories of policies including: 1/The group of labor and employment policies (Employment and vocational training policies); 2/The group of poverty reduction, social assistance, and social insurance policies;

3/The group of social basic service policies (primary education, health care, clean water).

### **2.3 Research Methods**

Due to the Covid-19 pandemic, field research was not possible. Thus, in order to implement the mentioned contents to achieve the set objectives, the research is mainly based on the analysis of secondary data sources. The data sources used in the research are:

*First*, the data collected from the State to local authority, especially that of the coastal provinces in the Mekong Delta such as Long An, Tien Giang, Ben Tre, Tra Vinh, Soc Trang, Bac Lieu, Ca Mau and Kien Giang. These are provinces which are heavily affected by climate change, especially saltwater intrusion. Some provinces provide data about actual impacts of saltwater intrusion and drought on rice farming, fruit tree planting, aquaculture, health, housing, domestic water, job search, labor/work deployment, migration, income of vulnerable groups, especially the target groups of social protection/security policies.

*Second*, the data collected from mass media, social media, particularly e-newspaper, reputable and reliable websites. In specific, they are data and articles related to manifestations of climate change, particularly drought and saltwater intrusion, actual impacts of drought and saltwater intrusion on rice farming, fruit tree planting, aquaculture, health, housing, domestic water, job search, labor/work deployment, migration, income of vulnerable groups, especially the target groups of social security policies.

*Third*, the data collected from research publications related to impacts of drought and saltwater intrusion on rice farming, fruit tree planting, aquaculture, health, housing, domestic water, job search, labor/work deployment, migration, income of vulnerable groups, especially the target groups of social security policies. In particular, we pay due attention to exploiting data from National Project “Researching And Assessing Impacts of Climate Change, Natural Disasters, And Human Activities In Order To Propose Solutions and Models for Sustainable Development In Hau Riverside Area” Code: BDKH.39/16-20 under: Science and Technology Program for Responding to Climate Change and Managing Natural Resources and Environment for the period of 2016-2020. Specifically, the research

team has exploited data from a sociological survey on 402 households in Ham Tan commune, Tra Cu district, Tra Vinh province and Long Phu commune, Long Phu district, Soc Trang province in 2019.

### ***3. Overview of climate change and the current situation of saltwater intrusion***

The Mekong Delta is one of the five deltas most likely to be severely affected by climate change in the world.<sup>8</sup> Climate change coupled with the construction of a number of dams in the upstream of the Mekong River leads to drought in the Mekong Delta.<sup>9</sup> Drought is accompanied with saltwater intrusion. Saltwater intrusion or salinization is the process of accumulating soluble salts (NaCl) in water or in soil that affects the area capacity of soil in freshwater ecosystems, and soil and water use. Saltwater intrusion is caused by many factors including imbalance in natural development process of soil, excessive exploitation of groundwater in coastal areas leading to the movement of saline water into freshwater aquifers, man-made processes, irrigation activities, saltwater intrusion in the downstream area and estuaries due to lower river flows in the dry season. In the Mekong Delta, saltwater intrusion is mostly the saltwater intrusion in the downstream area and estuaries due to low river flows in the dry season coupled with tidal resonance effects of sea level rise.

In the Mekong Delta, “saltwater intrusion enters deeper in the dry season, leading to major crop losses. The area and frequency of saltwater intrusion is increasing due to climate change. That causes more economic losses and it happens more often.”<sup>10</sup> Recently, “saltwater intrusion has been at an unexpectedly high level since December 2019, particularly during December 12-15, 2019. The salinity level of 4g/l in estuaries of the Mekong River can approach as deep as 57km inland in Ham Luong River and deeper than the salinity level in 2015 for 17km. Notably, the salinity level

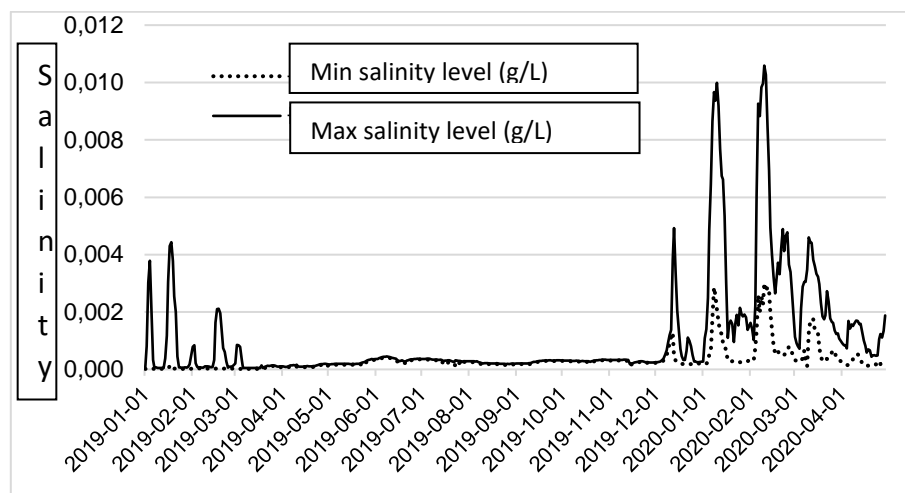
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<sup>8</sup> Ministry of Natural Resources and Environment, Ministry of Agriculture and Rural Development, Government of the Netherlands - Ministry of Infrastructure and Environment, Partners for Water Program - Embassy of the Netherlands in Hanoi, Royal HaskoningDHV, Wageningen University, Deltares, Rebel, and WATER.NL. 2013. "The Mekong Delta Plan." ([http://coastal-protection-mekongdelta.com/download/library/140.MekongPlan2013\\_VN.pdf](http://coastal-protection-mekongdelta.com/download/library/140.MekongPlan2013_VN.pdf)). Visited on May 5, 2019; Page 32.

<sup>9</sup> Mekong River Commission. 2019. "Drought management strategy for the Lower Mekong Basin 2020-2025." Vientiane: Mekong River Commission Secretariat.

<sup>10</sup> Ministry of Natural Resources and Environment, Ministry of Agriculture and Rural Development, Government of the Netherlands - Ministry of Infrastructure and Environment, Partners for Water Program - Embassy of the Netherlands in Hanoi, Royal HaskoningDHV, Wageningen University, Deltares, Rebel, and WATER.NL. 2013. "The Mekong Delta Plan." ([http://coastal-protection-mekongdelta.com/download/library/140.MekongPlan2013\\_VN.pdf](http://coastal-protection-mekongdelta.com/download/library/140.MekongPlan2013_VN.pdf)). Visited on May 5, 2019; Page 31.

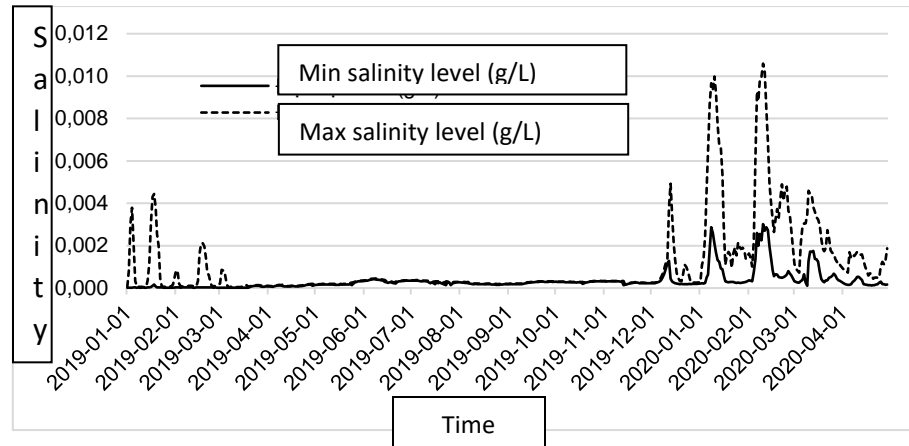
of 4 g/l increased during January 6-13, 2020 which is measured in the basins of two Vam Co Rivers (Vam Co Dong River and Vam Co Tay River, i.e. intruding as far as 82 - 85km, 18 - 20km deeper than that in 2016. The saltwater intrusion depth in Mekong estuary is 45 - 66km, 6 -17km deeper than that in 2016; 48km deep in land in the coast of West Sea and 6km deeper than that in 2016. From February 8-16, 2020, saltwater intrusion rose with high tide at Vam Co estuaries with saltwater intrusion extent is 100 - 110km, which was deeper than the yearly average extent 4-6km. The Mekong estuary's deepest point is about 75km deep, 15km deeper than that over the same period in 2016.<sup>11</sup> Salinity changes in some monitoring stations in the Mekong Delta are presented as below.



**Figure 2. Salinity changes in Long Vinh Bridge, Duyen Hai district, Tra Vinh province from November 2019 to May 2020 (Source: <http://mekong.rynansaas.com/>)<sup>12</sup>**

<sup>11</sup> Report of Ministry of Agriculture and Rural Development

<sup>12</sup> Citing from: Nguyen Tuan Anh, Mai Trong Nhuan, and Nguyen Tai Tue (co-author). 2020. Sustainable Development in the Context of Climate Change, Natural Disasters, and Human Activities in Hau River Basin. Hanoi: Hanoi National Publishing House.; Page 96.



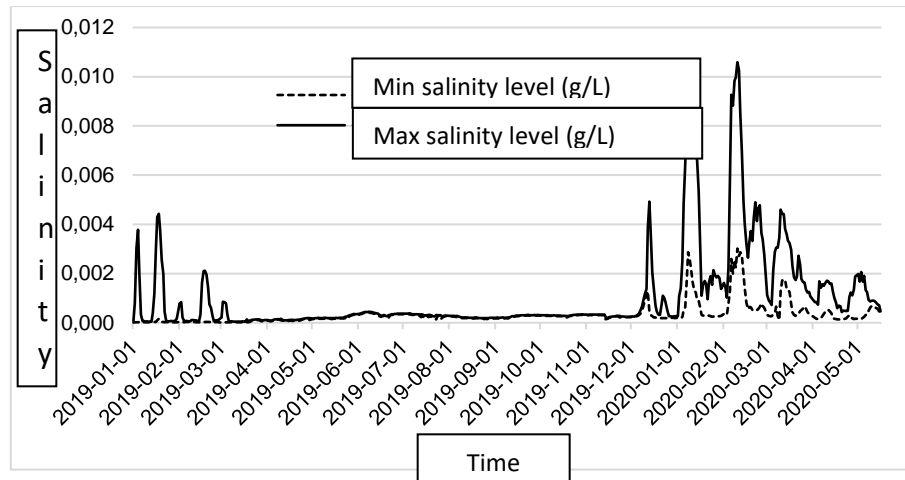
**Figure 3. Salinity changes in Cau Xoai Xiem Station from October 2019 to May 2020 (Source: <http://mekong.rynansaas.com/>)<sup>13</sup>**

The data above shows that at Cau Long Vinh Monitoring Station (Duyen Hai district, Tra Vinh province) next to the Hau River estuary, bordering on the East Sea, the salinity reached peak in February and March. From November 2019 to May 2020, the salinity level ranged between 8.066 and 23.177 g/L.

The data above shows that at Cau Xoai Xiem Monitoring Station in the inland river of Ngai Xuyen commune, Tra Cu district, Tra Vinh province, about 8km away from the Hau River and 30km away from the sea, the salinity reached peak in February. From October 2019 to May 2020, the salinity level ranged between 0.148 and 2.251 g/L.

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<sup>13</sup> Citing from: Nguyen Tuan Anh, Mai Trong Nhuan, and Nguyen Tai Tue (co-author). 2020. *Sustainable Development in the Context of Climate Change, Natural Disasters, and Human Activities in Hau River Basin*. Hanoi: Hanoi National Publishing House.; Page 96.



**Figure 4. Salinity changes in Vam Bon Bot Monitoring Station from January 2019 to May 2020 (Source: <http://mekong.rynansaas.com/>)<sup>14</sup>**

The data above shows that at Vam Bon Bot Monitoring Station in An Phu Tan commune, Cau Ke district, Tra Vinh province, which was in a small river flowing into the Hau River, about 500m away from the Hau River and about 60km away from the sea, the salinity reached peak from January to March. The salinity level ranged between 0.010 and 10.590 g/L. In general, 2020 was the year when saltwater intrusion approached the Hau River with the max salinity level of nearly 5 g/L which was measured by Vam Bon Bot Monitoring Station.<sup>15</sup>

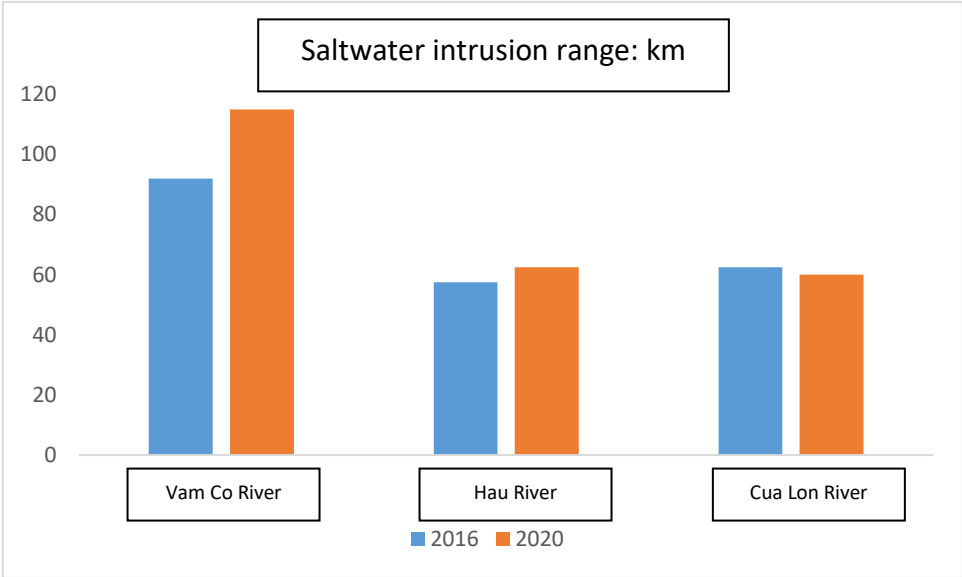
In recent years, saltwater intrusion in coastal provinces in the Mekong Delta has been unpredictable and become more serious due to the effects of El Nino<sup>16</sup>. El Nino causes little rain, leading to severe water shortage in the upstream of the Mekong River in the dry season. Besides, that the hydropower dams and reservoirs system along the Mekong mainstream increased water storage caused drought and water shortage in 2020 in many provinces in the downstream of the Mekong River more serious. The decline in the river's flow made it dry up, and saline water encroach further inland. Accordingly, the saltwater intrusion in the downstream area became

<sup>14</sup> Citing from: Nguyen Tuan Anh, Mai Trong Nhuan, and Nguyen Tai Tue (co-author). 2020. *Sustainable Development in the Context of Climate Change, Natural Disasters, and Human Activities in Hau River Basin*. Hanoi: Hanoi National Publishing House.; Page 97.

<sup>15</sup> See more at: Nguyen Tuan Anh, Mai Trong Nhuan, and Nguyen Tai Tue (co-author). 2020. *Sustainable Development in the Context of Climate Change, Natural Disasters, and Human Activities in Hau River Basin*. Hanoi: Hanoi National Publishing House.; Page 95-98.

<sup>16</sup> El Nino is the unusual warming of surface waters in the eastern tropical Pacific Ocean which lasts 8-12 months or longer. It takes place every 3-4 years or sooner; La Nina is the unusual cooling of surface waters in the above area whose cycle is similar to that of El Nino.

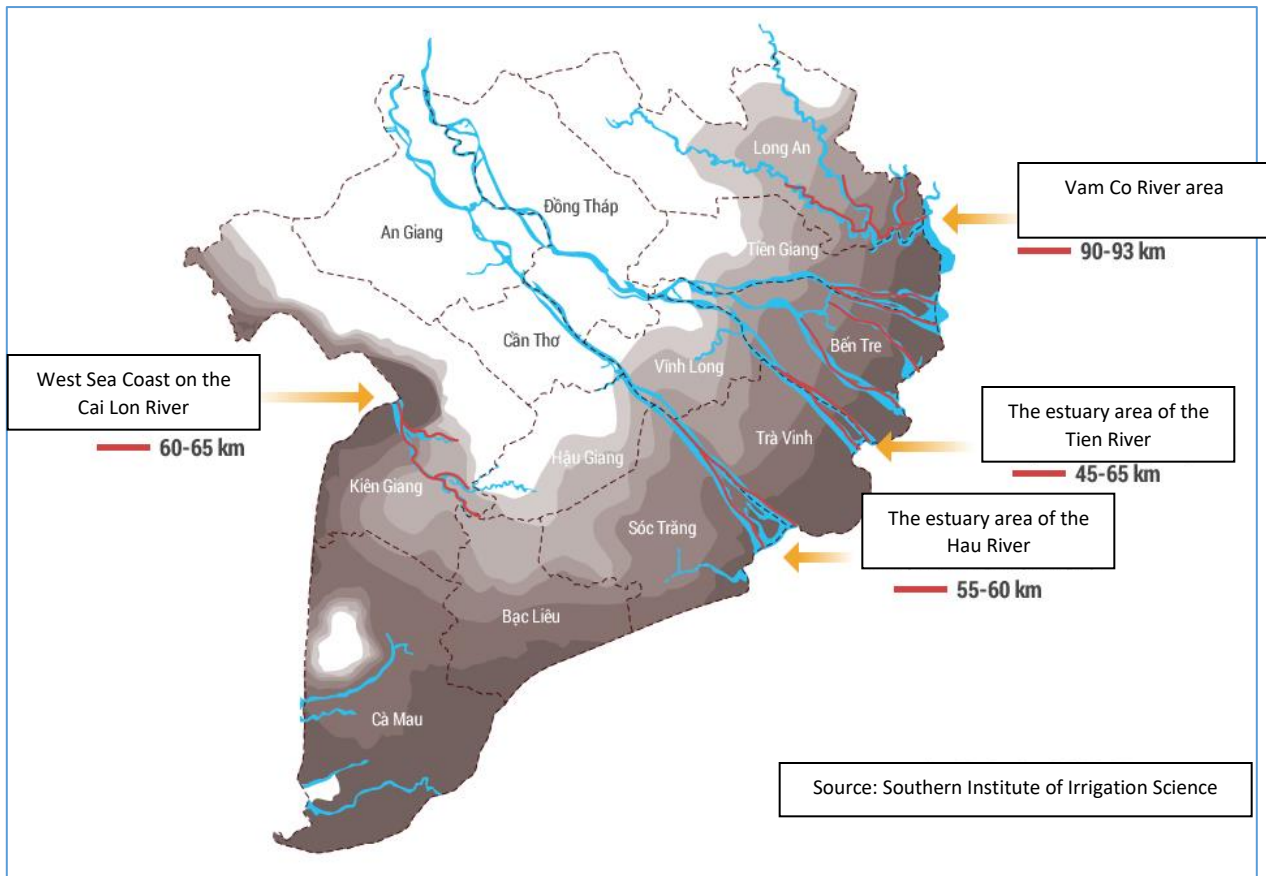
complicated. The historic salinity and drought in 2016 was considered a 100-year event by scientists. The salinity and drought in the 2020 dry season took place sooner and more seriously, even surpassing that in 2016. Accordingly, the saltwater intrusion range from river estuary to the inland was much wider. In 2020, the salinity range was even wider than that in 2016 (Figure 5)



**Figure 5: Saltwater intrusion range from the river estuary to the inland<sup>17</sup>**

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<sup>17</sup> Source: National Centre for Hydro-Meteorological Forecasting (NCHMF) on March 2, 2020



**Figure 6: Saltwater intrusion in the Mekong Delta in 2016<sup>18</sup>**

Two important upstream factors mainly regulating water resources and saltwater intrusion in the 2019 – 2020 dry season in the Mekong Delta were the amount of water stored in TonleSap and the flow to the Kratie station (at the beginning of the Mekong Delta). The year of 2019-2020 was considered as a low flow year with a serious inflow deficit to the Mekong Delta compared to the yearly average inflow, even lower than the period of 2015-2016 (the year of record saltwater intrusion). That was the main cause to the early onset, deeper and prolonger saltwater intrusion during the 2019 – 2020 dry season.<sup>19</sup>

In fact, saltwater intrusion was already very high during December 12-15, 2019. In particular, the saltwater of 4g/l in estuaries of the Mekong River could intrude as deep as 57km inland (in the Ham Luong River), 17km deeper than that in 2015. In

<sup>18</sup> Source: Southern Institute of Irrigation Science, 2016

<sup>19</sup> General Department of Disaster Prevention and Control (Ministry of Agriculture and Rural Development). 2020. "Synthetic report on drought and saltwater intrusion in the Southern region in 2019-2020 (Updated by March 2, 2020)."



January 2020, the saltwater intrusion increased during January 6-13, 2020 with the salinity level of 4g/l measured in the basins of two Vam Co Rivers (Vam Co Dong River and Vam Co Tay River), i.e. intruding as far as 82 - 85km inland, 18 - 20km deeper than that in 2016; the saltwater intrusion depth in the Mekong estuary was 45 - 66km, 6 - 17km deeper than that in 2016; 48km deep inland in the coast of West Sea, 6km deeper than that in 2016. During February 8-16, 2020, saltwater intrusion was in its high time together with the high tide. In particular, the salinity level of 4g/l was measured in estuaries of the two Vam Co Rivers where the saltwater intrusion extent was 100 - 110km, 4 -6km deeper than that over the same period in 2016. Furthermore, in Mekong estuary, the deepest saltwater intrusion depth was about 75km, 15km deeper than that in 2016.<sup>20</sup>

***As for saltwater intrusion in 2020:*** The water level on the mainstream of the Mekong River changed slowly and was lower than that over the same period in 2016 by 0.1 – 0.6m. The water level on the Tien and Hau Rivers then decreased with the tide. The highest water level in a week measured in Tan Chau was 1.23m (February 26), in Chau Doc 1.39m (February 26), equivalent to that over the same period in 2016. Saltwater intrusion in the Mekong Delta reached peak during February-March then dropped off. The max salinity level measured at the monitoring stations in the downstream of the Tien River, the Hau River, and the Vam Co Rivers and the Ca Mau peninsula area was low during February 11-20. In some others stations in Ben Tre, Tien Giang and Ca Mau, the measured salinity level was higher.

- *Vam Co Rivers* (Vam Co Dong River and Vam Co Tay River): the saltwater intrusion extent of 87 - 99km, 4-25km deeper than that over the same period in 2016;
- *Mekong estuary*: Cua Tieu River, Cua Dai River: the saltwater intrusion extent of about 56 km, 13-15km deeper than that over the same period in 2016; Ham Luong River: the saltwater intrusion extent of about 78km, 16km deeper than that over the same period in 2016; Co Chien River: the saltwater intrusion extent of 51km, 4km deeper than that over the same period in

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<sup>20</sup> Source: Viet Nam Meteorological and Hydrological Administration - Ministry of Natural Resources and Environment. 2021. "Saltwater intrusion situation in the Mekong Delta in 2021." Viet Nam Meteorological and Hydrological Administration - Ministry of Natural Resources and Environment (<http://kttvqg.gov.vn/kttv-voi-san-xuat-va-doi-song-106/tinh-hinh-xam-nhap-man-tai-dong-bang-song-cuu-long-nam-2021-9239.html>). Visited on October 14, 2021.

2016; Hau River: the saltwater intrusion extent of about 49km, 12km deeper than that over the same period in 2016;

- *Cai Lon River*: The saltwater intrusion extent of 52km, 9km deeper than that over the same period in 2016.

**Table 1: Saltwater intrusion depth measured in estuaries on February 29, 2020<sup>21</sup>**

Name of River	Saltwater intrusion depth in 2019 - 2020 (Km)		Compared to that over the same period in 2016 (+/-Km)
	From 21 to 29 February	Compared to that from 14 to 20 February	
<b>Basins of two Vam Co Rivers</b>			
Vam Co Dong	87	+ 8	+ 4
Vam Co Tay	99	+ 11	+ 25
<b>Mekong Estuary Region</b>			
Cua Tieu River	56	+ 7	+ 15
Cua Dai River	56	+ 7	+ 13
Ham Luong River	78	+ 3	+ 16
Co Chien River	51	+ 8	+ 4
Hau River	49	+ 6	+ 12
<b>West Sea Coast on Cai Lon River</b>			
Cai Lon River	52	0	+ 9

**Table 2: Max salinity level (g/l) by February 29, 2020<sup>22</sup>**

No.	Monitoring Station	River	Province	Distance to river estuary (km)	Max salinity level (g/l)	Compared to the same period in 2016 (g/l)	Forecast S max 1-10 March
1	Cau Noi	Vam Co	Long An	20	18,4	< 1,3	22
2	Ben Luc	Vam Co Dong	Long An	75	7,9	< 1,8	11,6
3	Tan An	Vam Co Tay	Long An	80	8,1	approximately	8,9
4	Hoa Binh	Cua Tieu	Tien Giang	30	9,6	< 4,0	12,8
5	An Dinh	Tien	Tien Giang	48	5,9	> 1,9	6,5
6	My Tho	Tien	Tien Giang	55	5,7	> 3,1	5,9

<sup>21</sup> General Department of Disaster Prevention and Control (Ministry of Agriculture and Rural Development). 2020. "Synthetic report on drought and saltwater intrusion in the Southern region in 2019-2020 (Updated by March 2, 2020).

<sup>22</sup> Source: Southern Hydrometeorology Station

7	An Thuan	Ham Luong	Ben Tre	10	28,8	> 0,4	29,8
8	Son Doc	Ham Luong	Ben Tre	20	25,5	< 1,9	27,1
9	Tra Vinh	Co Chien	Tra Vinh	35	7,8	< 6,8	13,2
10	Cau Quan	Hau	Tra Vinh	32	9,2	< 2,3	14,7
11	Dai Ngai	Hau	Soc Trang	30	8,9	< 4,8	14,4
12	Tran De	Hau	Soc Trang	10	23,7	< 3,6	26,2
13	Ca Mau	Ganh Hao	Ca Mau	52	29,4	> 0,5	29,8
14	Go Quao	Cai Lon	Kien Giang	35	5,8	< 5,2	10,7
15	Xeo Ro	Cai Lon	Kien Giang	7	12,6	< 9,3	22,6
16	An Ninh	Cai Be	Kien Giang	8	7,2	< 11,8	20,2
17	Phuoc Long	K.Phung Hiep	Bac Lieu	Inland	25,4	> 8,1	25,6

### **Saltwater intrusion range in March 2020**

#### ***- as for salinity level of 1g/l***

+ Vam Co Dong and Vam Co Tay Rivers: saltwater intrusion extent of 110 - 130km;

+ Cua Tieu River, Cua Dai River, Ham Luong River: 65 - 95km;

+ Co Chien River: 60 - 65km;

+ Hau River: 60 - 67km;

+ Cai Lon River: 55 - 65km;

#### ***- as for salinity level of 4g/l***

+ Vam Co Dong and Vam Co Tay Rivers: 87 - 110km;

+ Cua Tieu River, Cua Dai River: 55 - 60km;

+ Ham Luong River: 68 - 78km;

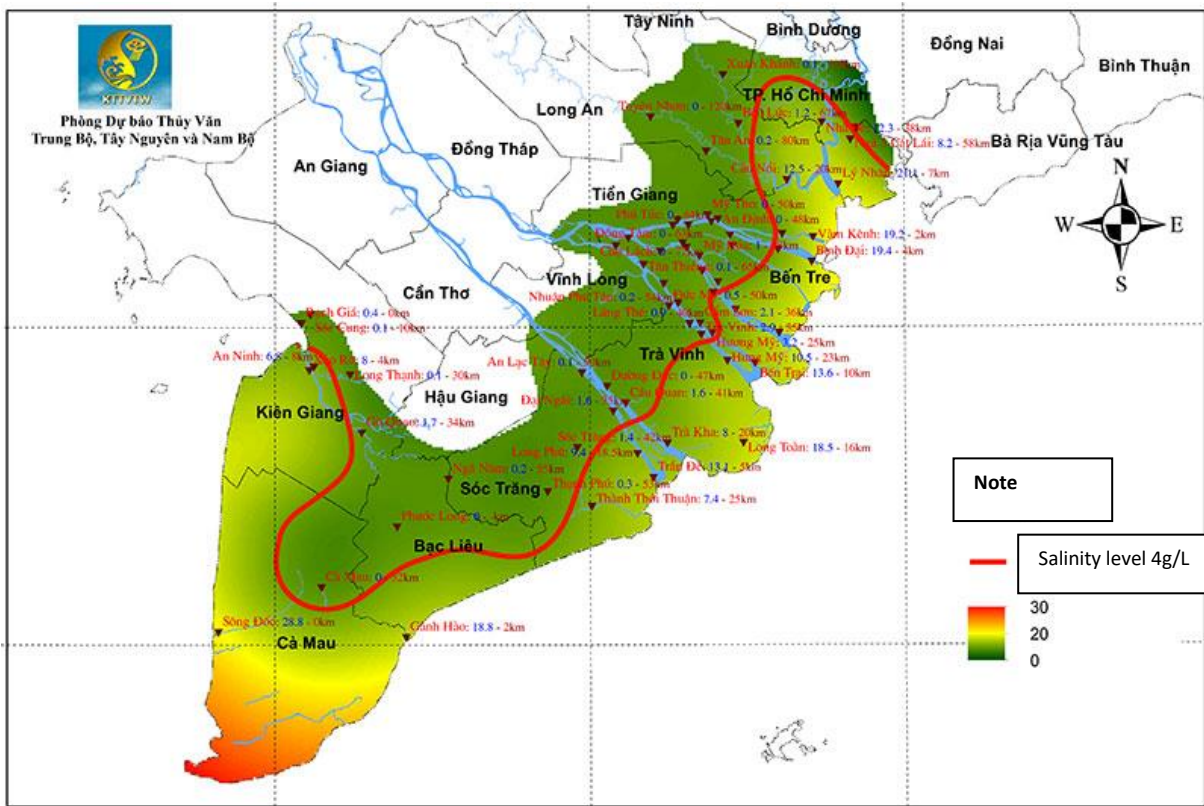
+ Co Chien River: 55 - 68km;

+ Hau River: 60 - 67km;

+ Cai Lon River: 50 - 58km.

**Saltwater intrusion in 2021:** According to reports, saltwater intrusion in the Mekong Delta in the 2020-2021 dry season was higher than the annual average, though not as bad as that in the 2019-2020 dry season; saltwater intrusion reached peak in Mekong estuary in February (from 10 to 15 February, and from 26 February

to March 2), and March (from 12 to 16 March, and from 25 to 29 March); in Vam Co River and Cai Lon River in March and April (from 9 to 14 April, and from 24 to 28 April).



**Figure 7: Saltwater intrusion in Mekong Delta in 2021<sup>23</sup>**

Overall, saltwater intrusion, a specific manifestation of climate change, has been taking place on an increasing area and with an increasing frequency in the Mekong Delta. Recently, “saltwater intrusion has been exceptionally high”. Coupled with saltwater intrusion is drought in the dry season, which leads to salinity and drought (salinization). The question is that how salinity and drought has affected production, employment, income, daily activities, and health of people in the Mekong Delta, especially vulnerable groups including poor people, ethnic minority people, people

<sup>23</sup> Source: National Centre for Hydro-Meteorological Forecasting (NCHMF), 2021

with disabilities, women, children, migrant workers, informal workers, unemployed workers, and people with extremely difficult backgrounds. The coming part of the report will help answer the question.

#### ***4. Climate change (saltwater intrusion) impacts on social groups***

##### ***4.1. Saltwater intrusion impacts on rice farming, fruit tree planting and aquaculture***

Rice farming plays a very important role in life of Vietnamese people. Rice production not only brings about economic benefits but also plays a great role in ensuring national food security. However, rice farming is facing great challenges due to climate change because it depends on a number of objective factors such as climate and natural conditions of the rice farming region. Healthy rice plants require suitable climate conditions such as tropical regions with sufficient irrigation water and plenty of alluvium. In recent years, climate change has been making rice farming more difficult. Particularly, saltwater intrusion and drought – the most notable and specific manifestations of climate change in the Mekong Delta – have been affecting many livelihoods of local people. It is worth noting that saltwater intrusion with the salt concentration of 4 ‰ or more has the most obvious impact on production models. At this level, plant growth and development is reduced and productivity is damaged. The below data reflects how salinization area in the entire Mekong Delta with the salt concentration of 4‰ affects some of the main livelihoods in the locality.

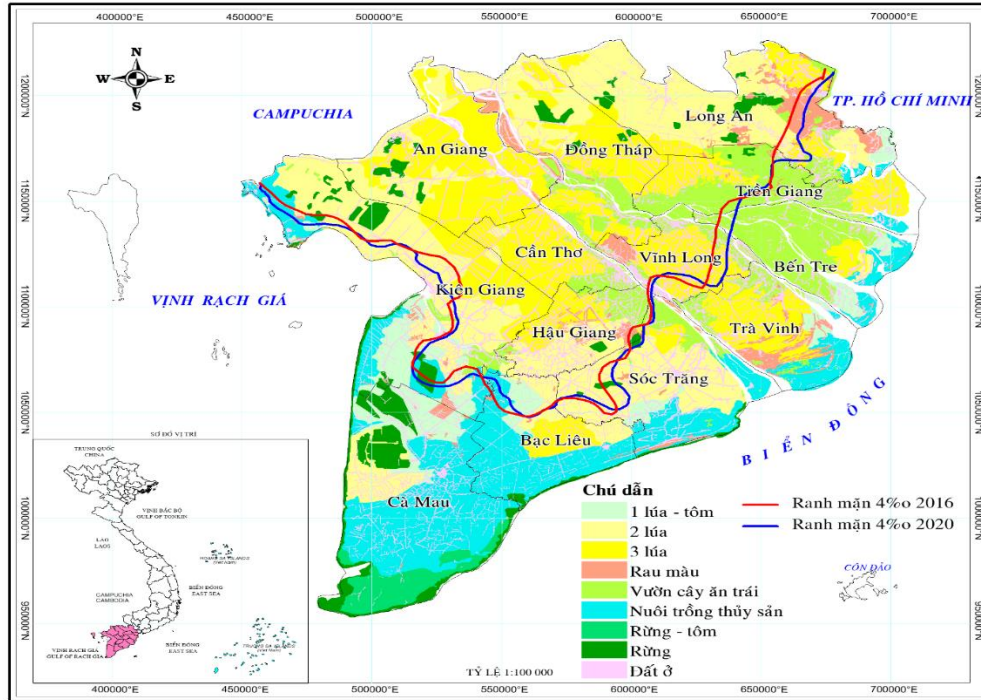
**Table 3. Salinization area in the entire Mekong Delta with the salt concentration of 4‰<sup>24</sup>**

<b>No.</b>	<b>Production activities</b>	<b>2016 (ha)</b>	<b>2020 (ha)</b>	<b>Changes (+/-) (ha)</b>
1	Single-cropping rice – shrimp farming	163419.98	163737.85	317.87
2	Double-cropping rice farming	259262.01	230695.98	-28566.03

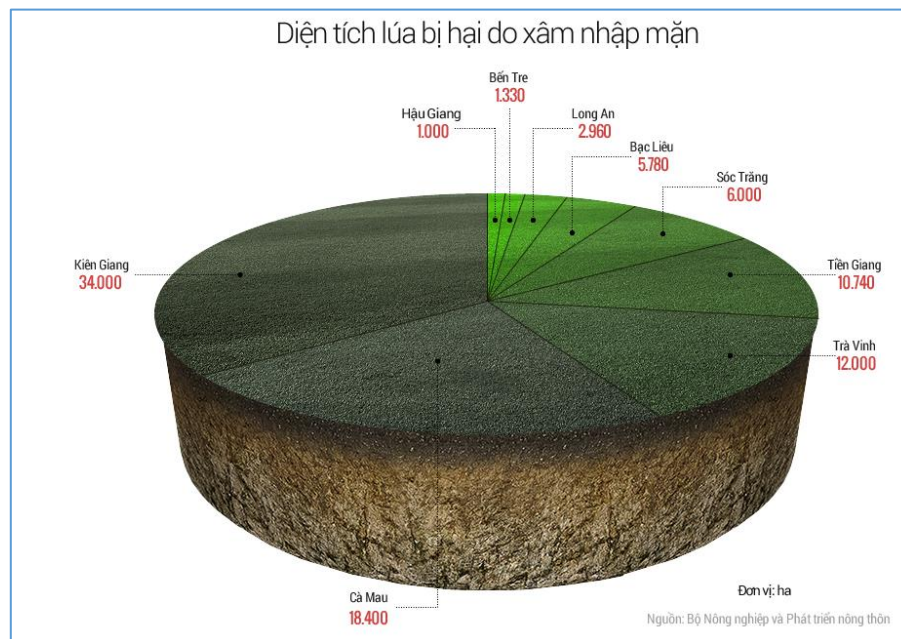
<sup>24</sup> Source: The research team compiled data from the General Statistics Office and Ministry of Agriculture and Rural Development

3	Triple-cropping rice farming	214659.01	201808.84	-12850.17
4	Aquaculture	536967.61	535521.42	-1446.19
5	Forestation	95799.34	86723.00	-9076.34
6	Fruit tree planting	247020.33	235619.70	-11400.63
7	Forestation – shrimp farming	73311.28	73311.28	0.00
8	Land	261723.78	248872.33	-12851.45
9	Vegetable	75308.45	64159.27	-11149.18

According to spatial analysis (Figure 7) based on developing salinity maps in 2016 and 2020 with the salinity of 4‰, and the data extracted and presented in Table 3, the rice farming area affected by saltwater intrusion included: 163,419 ha of rice-shrimp farming area in 2016 and 163,737 ha in 2020; 259,262 ha of double-cropping rice area in 2016 and 230,695 ha in 2020 (which means 518,524 ha of the sowed area in 2016 and 461,391 ha in 2020) and 214,659 ha of triple-cropping rice area (which means 643,977 ha of the sowed area in 2016 and 605,426 ha in 2020); 536,967 ha of aquaculture area in 2016 and 535,521 ha in 2020; 247.020 ha of fruit tree planting area in 2016 and 235,619 ha in 2020; 75,308 ha of vegetable area in 2016 and 64.159 ha in 2020. Additionally, also in 2016 and 2020, about 261,723 ha and 248,872 ha of salinization area, respectively, caused difficulty for people’s lives. In general, the affected area in 2020 decreased compared to that in 2016 but were still on the large scale (Figure 7). As for the affected area, the extent and level of damage is very different on specific groups and localities. Actual damage depends on sensitivity, adaptability and response of specific object.



**Figure 8: Area affected by saltwater intrusion in 2020<sup>25</sup>**



<sup>25</sup> Source: The research team compiled data from the General Statistics Office, Ministry of Agriculture and Rural Development, and the Mekong Delta Development Research Institute – Can Tho University (2021).

### **Figure 9: Saltwater intrusion impact on rice cultivation in Mekong Delta in 2016<sup>26</sup>**

According to data from the Ministry of Agriculture and Rural Development, salinity and drought in 2016 affected 100,000 ha of rice cultivation area, specifically in Ca Mau: 18,400ha, Kien Giang: 34,000ha, Hau Giang: 1,000ha, Ben Tre: 1,330ha, Long An: 2,960ha, Bac Lieu: 5,780ha, Soc Trang: 6,000ha, Tien Giang: 10,740ha and Tra Vinh: 12,000ha. By 2019-2020, saltwater intrusion had caused damage to many provinces in the Mekong Delta. In the entire Mekong Delta, due to saltwater intrusion, in 2019 16,500ha of rainy season rice was damaged, 14,000ha lost; 41,900 ha of winter-spring rice in 2019-2020 was damaged, 26,000 ha lost; 6,650 ha of fruit tree area was damaged, 355ha lost, which was mostly concentrated in Ben Tre, Vinh Long and Tien Giang provinces; and 8,715 ha of aquaculture area was damaged. In specific, in Ca Mau province, 16,554,8 ha of the rice-shrimp farming area was damaged; of which the area with 30% - 70% damage was 3,756,96 ha; the area with more than 70% damage was 12,797,85 ha. 10,644 ha of winter-spring rice area were damaged, the area with 30% - 70% damage was 10,000ha, the area with more than 70% damage was 644ha. The area of vegetable with more than 70% damage was 3.6ha. In Ben Tre province, 104.7 ha of autumn-winter rice was damaged by 30%-70%. Besides, 5,000ha of the winter-spring rice area in the province grew slowly, a large area of the rice was totally lost. In Tra Vinh province, 624 ha of the winter-spring rice was damaged, of which the area with 30% - 70% damage was 461ha; the area with more than 70% damage was 163ha. In Kien Giang province, 172 ha of the rainy season rice area was totally lost, 1,503 ha of the winter-spring rice area was damaged by 30%-70%. In Soc Trang province, 1,000 ha of the winter-spring rice area damaged, of which the area with 30% - 70% damage was 773ha; the area with more than 70% damage was 227ha.<sup>27</sup> In Ben Tre province, it was estimated that 5,200 ha of rice area in Ba Tri and Giong Tom districts was totally lose due to no irrigation water; about 20,000 ha of fruit tree area, more than 72,000 ha of coconut,

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<sup>26</sup> Source: Ministry of Agriculture and Rural Development. 2016b. "Report on drought and saltwater intrusion in the Mekong Delta and response solutions at the Conference on drought and saltwater intrusion in the Mekong Delta chaired by the Prime Minister in Can Tho City on March 7, 2016."

<sup>27</sup> —. 2016a. "Report of the Ministry of Agriculture and Rural Development on drought and saltwater intrusion in the Mekong Delta, the South Central and the Central Highlands in 2016: Causes and Response Solutions."



nearly 1,500 ha of vegetable, more than 100,000 seedlings and ornamental flowers were affected by saltwater intrusion<sup>28</sup>.

Besides saltwater intrusion, the Mekong Delta also has to cope with drought. In the 2015-2016 dry season, the Mekong Delta experienced a severe saltwater intrusion and drought. It caused great damage to the region. In specific, in late March 2016, salinity and drought affected all 13 provinces in the Mekong Delta.<sup>29</sup> In Tra Vinh province, by February 2020, 5,177 ha of rice area of 6,710 households was damaged with the damage level of 30% - 70%. In addition, some fruit orchards including 72.5 ha of orange in Tra Vinh province withered and lost their leaves.<sup>30</sup> In Soc Trang province, 4,009ha of rice area was affected by salinity and drought. By March 25, 2020, the total cultivation area affected by salinity and drought in Long Phu, Ke Sach, Châu Thanh and My Tu was 3,501 ha, 3,477 ha of which was totally lost. The estimated crop yield losses were 22,600 tonnes.<sup>31</sup>

In reality, salinity and drought also affected aquaculture in the localities. For example, in Kien Giang, in the 2019-2020 period, the severe saltwater intrusion made sudden changes in environmental factors in aquaculture ponds, adversely affecting the resistance of shrimp; as a result, 6,949,6ha of shrimp farming area was damaged.<sup>32</sup>

Saltwater intrusion could have a positive impact or no impact on rice farming, fruit tree planting, and aquaculture activities of a proportion of households. However, the notable thing was that saltwater intrusion has a negative impact on many different

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<sup>28</sup> Department of Social and Environmental Affairs. 2020. "Saltwater intrusion in the 2019-2020 dry season and its effects on production and daily life in some provinces in the Mekong Delta." National Centre for Socio-Economic Information and Forecast, Ministry of Planning and Investment (<http://ncif.gov.vn/Pages/NewsDetail.aspx?newid=22106>). Visited on September 19, 2021.

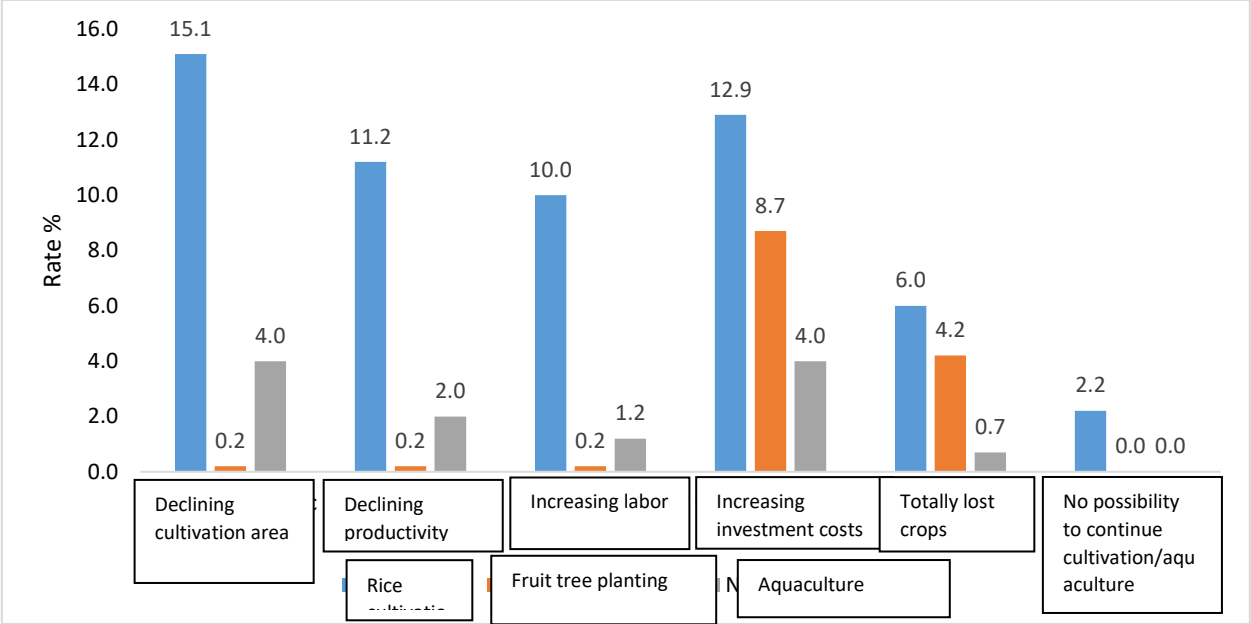
<sup>29</sup> Nguyen Ngoc Anh. 2016. "Historic drought and salinity in 2016 in the Mekong Delta: Lessons learned and Response Solutions." Vietnam Science and Technology Magazine (<https://khoaahocvacongnghevietnam.com.vn/khcn-trung-uong/13123-han-man-lich-su-2016-o-dong-bang-song-cuu-long-bai-hoc-kinh-nghiem-va-nhung-giai-phap-ung-pho.html>). Visited on May 20, 2019.

<sup>30</sup> Tra Vinh Provincial People's Committee. 2020. "Report on socio-economic situation in February and some key tasks in March 2020."

<sup>31</sup> Soc Trang Provincial People's Committee. 2020. "Report on the socio-economic situation in the first quarter and main directions and tasks in the second quarter of 2020."

<sup>32</sup> Kien Giang Provincial People's Committee - Department of Labor, Invalids, and Social Affairs. 2021. "Report on impacts of saltwater intrusion on vulnerable groups and proposals for revising and improving social security policies in the context of climate change."

localities, especially on rice farming as explained above. In reality, saltwater intrusion affected rice farming, fruit tree planting, and aquaculture activities of a remarkable proportion of households. That was proved by a sociology survey on 402 households in Soc Trang and Tra Vinh provinces. The survey result was presented as below.



**Figure 10: Impacts of saltwater intrusion on rice farming, fruit tree planting and aquaculture<sup>33</sup>**

The above data shows some noteworthy points as below.

*First*, saltwater intrusion had multi-dimensional impacts on rice farming, fruit tree planting, and aquaculture such as declining cultivation area, declining productivity, increasing labor, increasing investment costs, totally lost crops, or no possibility to continue cultivation or aquaculture activities.

*Second*, saltwater intrusion had multi-dimensional impacts on rice farming of a considerable proportion of households. In particular, from 10% to more than 15% of the households were affected by saltwater intrusion in terms of rice farming. The impacts are declining cultivation area, declining productivity, increasing labor, and

<sup>33</sup> Source: Data from the Project “Research into Impacts of Climate Change, Natural Disasters, and Human Activities to propose solutions and models for sustainable development in the Hau River basin”, Code: BDKH.39/16-2020.

increasing investment costs. Even up to 8.2% of the households totally lost their crops or could not continue doing rice farming. In short, saltwater intrusion had negative multi-dimensional impacts on a remarkable number of rice cultivation households. It even got worse in vulnerable groups including poor households, ethnic minority households, households having people with disabilities, and households with extremely difficult backgrounds. In fact, the number of households belonging to vulnerable groups under impact of saltwater intrusion in some localities was relatively high. For example, in Bac Lieu, saltwater intrusion in the 2015-2016 period affected 3,227 households doing rice farming who were poor households, near-poor households, ethnic minority households, and single-person households, etc.<sup>34</sup>

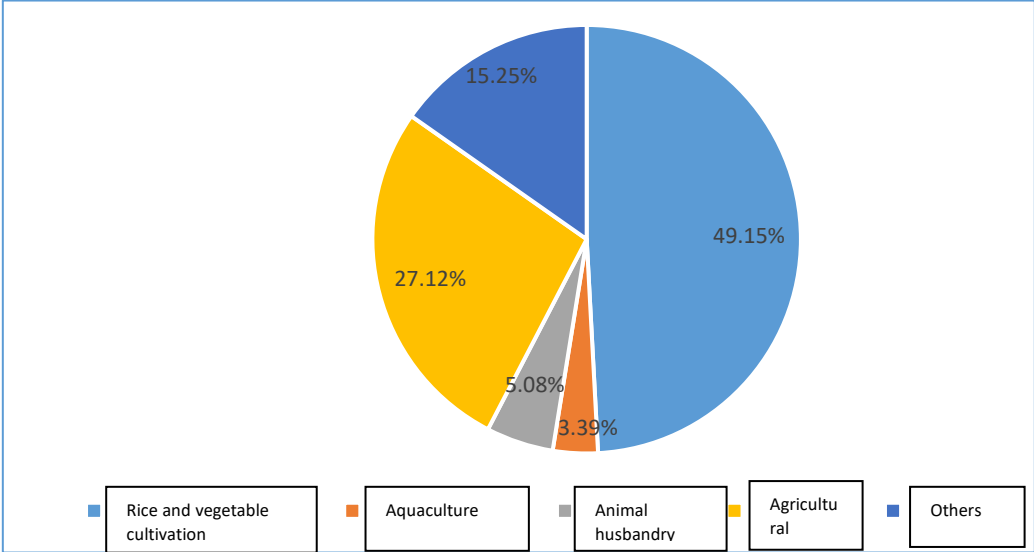
*Third*, saltwater intrusion had a negative impact on a certain number of households planting fruit tree. In specific, up to 8.7% of the fruit tree planting households said that they had to increase investment costs on fruit tree planting due to saltwater intrusion, 4.2% of the households also reported that their fruit crops were sometimes totally lose due to the same problem. The point to emphasize was that the burdens on a certain number of some fruit tree planting households might be more severe than those on vulnerable groups which were poor households, ethnic minority households, households having people with disabilities and households with extremely difficult backgrounds.

*Fourth*, saltwater intrusion did not affect aquaculture households very much. In reality, saltwater intrusion could make it convenient for doing aquaculture. However, if the salinity goes too high, it will be difficult for them to raise some aquatic creatures. Thus, a certain number of aquaculture households said that they had to increase investment costs (4.0%), totally lost their aquaculture crops (0.7%) or could not continue doing aquaculture (2.2%) due to saltwater intrusion. It would be much more difficult if the aquaculture households were poor households, ethnic minority households, households having people with disabilities and households with extremely difficult backgrounds.

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<sup>34</sup> Bac Lieu Provincial People's Committee - Department of Labor, Invalids, and Social Affairs. 2021. "Report on providing data and situation about impacts of saltwater intrusion/climate change on vulnerable groups."

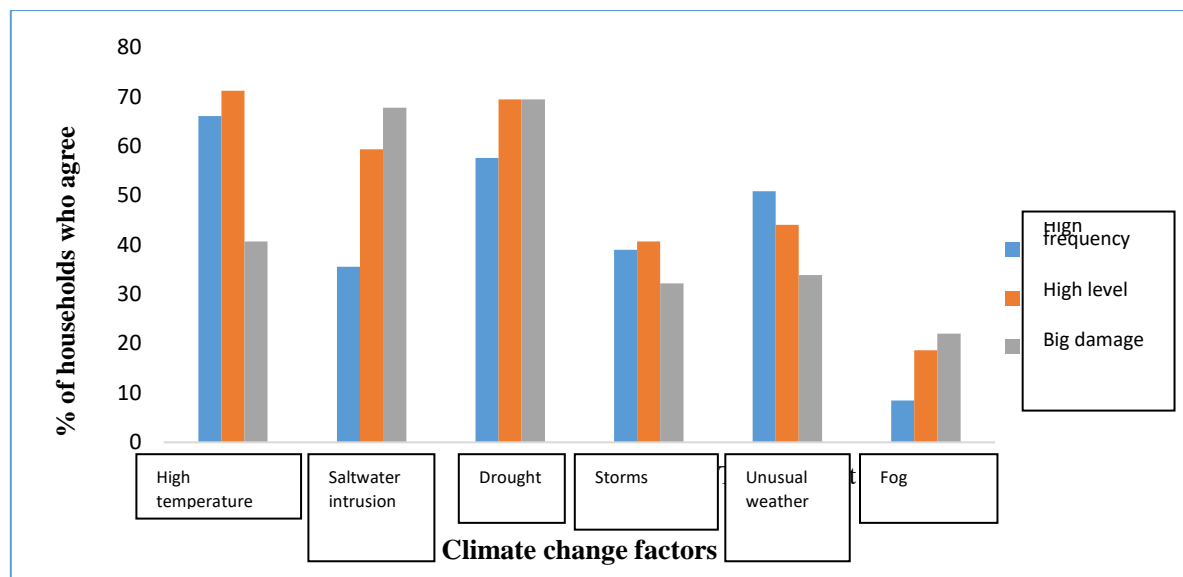
One of the obvious proofs of negative impacts of saltwater intrusion on livelihoods of the vulnerable groups is the negative impacts of saltwater intrusion on livelihoods of ethnic minority groups, particularly Khmer ethnic group in Tra Vinh province. The 2017 data of the Canada Fund for Local Initiatives (CFLI)<sup>35</sup> implemented in Tra Vinh province indicated that the main livelihood of Khmer farming households in the coastal area were rice and vegetable cultivation, i.e. more than 49% of the total households. It was followed by agricultural laborers (landless farmers) with 27.12%, and those who did aquaculture farming. Tra Vinh had been affected by prolonged salinity and drought for recent years, which accordingly distracted rice and vegetable cultivation very much. Because those were their main livelihoods, their life was even worse than before.



**Figure 11: Important livelihoods of households<sup>36</sup>**

<sup>35</sup> Nguyen Hong Tin. 2017. "Strengthening capacity of Khmer women in adapting to climate changes in Tra Vinh province, Vietnam." Mekong Delta Development Research Institute (MDI), Can Tho University (CTU). Project technical report submitted to the Canada Fund for Local Initiatives.

<sup>36</sup> Source: Nguyen Hong Tin. 2017. "Strengthening capacity of Khmer women in adapting to climate changes in Tra Vinh province, Vietnam." Mekong Delta Development Research Institute (MDI), Can Tho University (CTU). Project technical report submitted to the Canada Fund for Local Initiatives.



**Figure 12: Climate change factors in surveyed area<sup>37</sup>**

The data above is about how climate change factors affected life of Khmer people on the coast in Tra Vinh province. It indicates that high temperature was considered an usual phenomenon in Tra Vinh as well as other provinces in the Mekong Delta. However, the temperature has been increasing in the past five years. And about 70% of surveyed women said that it happened with high frequency and high level. However, plants and animals in the surveyed area could adapt well to high temperature, which led to few severe impacts. In particular, just about 40% of the surveyed households reported that high temperature caused big damage, most of which were those planting vegetable. In contrast, saltwater intrusion infrequently but severely affected the rice cultivation system of the farmers (70%). Similar to saltwater intrusion, drought was one factor seriously affecting rice and vegetable cultivation of farmers and it occurred most seriously in the 2016 dry season, which made the total winter-spring rice crop lost and they could only cultivate rice in the rainy season. On the contrary, storms and unusual weather was said to occur frequently by 40-50% of the total households, and 30% of the total households reported that it affected them seriously. That was the factor negatively affecting

<sup>37</sup> Source: Nguyen Hong Tin. 2017. "Strengthening capacity of Khmer women in adapting to climate changes in Tra Vinh province, Vietnam." Mekong Delta Development Research Institute (MDI), Can Tho University (CTU). Project technical report submitted to the Canada Fund for Local Initiatives.

vegetable cultivation in highland area in Tra Vinh but that was not the case for rice production in the province.

*In the nutshell, saline intrusion had negative multi-dimensional impacts on rice cultivation of households in the Mekong Delta, i.e. reduced farming area, reduced productivity, increasing labor, increasing investment costs, and even totally lost crops. The sociology survey conducted in Tra Vinh and Soc Trang provinces shows that the proportion of households doing rice farming under negative impacts of saltwater intrusion was remarkable, ranging between 8.2% and 15.1% depending on types of impacts. Saltwater intrusion also had negative impacts on a certain proportion of households planting fruit trees, i.e. 4.2%-8.7% of the households. Moreover, although saltwater intrusion did not affect aquaculture households very much but up to 4% of the households reported that they had to increase investment costs due to saltwater intrusion. The noteworthy point was that due to negative impacts of saltwater intrusion on rice farming, fruit tree farming, and aquaculture, vulnerable groups such as poor households, ethnic minority households (for example, Khmer people in Tra Vinh province), households having people with disabilities, households with extremely difficult backgrounds which lived on rice farming, fruit tree planting and aquaculture had much more difficulties.*

#### **4.2. Saltwater intrusion impacts on employment**

One of the concerning problems is saltwater intrusion impacts on employment. Saltwater intrusion has direct impacts on employment such as causing difficulties for work deployment. According to interviews with local people in Ham Tan commune, Tra Cu district, Tra Vinh province, saltwater intrusion caused difficulties for rice farming, which meant that it negatively affected labor and employment. To cope with the situation, local people had to take different actions to combat salinity.<sup>38</sup> As for indirect impacts, that saltwater intrusion hinders rice farming, fruit tree planting, and aquaculture makes it difficult for workers to find jobs. According to a report of Kien Giang Provincial Department of Labor, Invalids and Social

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<sup>38</sup> Information collected from in-depth interviews with a man born in 1978 in Ham Tan commune, Tra Cu district, Tra Vinh province (Data from the Project “Research into Impacts of Climate Change, Natural Disasters, and Human Activities to propose solutions and models for sustainable development in the Hau River basin”, Code: BDKH.39/16-2020)

Affairs<sup>39</sup>, climate change, including saltwater intrusion, negatively affects job opportunities and income of workers, and migration is considered one of the strategies for responding to climate change. Local people in affected regions (districts and cities such as Rach Gia, Chau Thanh, An Bien, An Minh, Go Quao, Giong Rieng, U Minh Thuong, etc.) have migrated and settled in bigger cities having industrial parks and/or export processing zones such as Can Tho, Ho Chi Minh City, Binh Duong, etc. to look for jobs.

**Table 4. Data on workers in Kien Giang province migrating and working outside the province and abroad under contract**

<b>Year</b>	<b>Total number of people who get jobs</b>	<b>In the province</b>	<b>Outside the province</b>	<b>Number of people working abroad under contract</b>
2016	34,821	16,562	18,259	92
2020	35,570	18,570	17,000	286

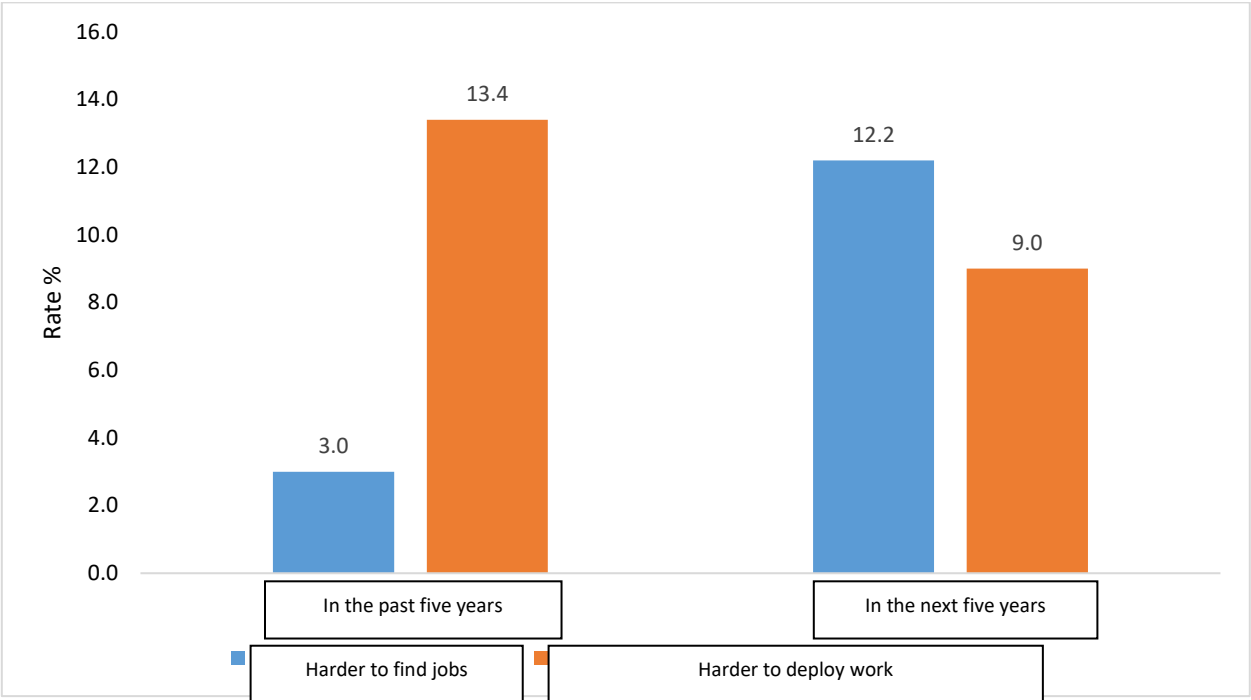
As for impacts of saltwater intrusion in particular and other manifestations of climate change in general on employment, according to the data from researches of the Canada Fund for Local Initiatives (CFLI)<sup>40</sup> conducted in 2017 in Tra Vinh province, many Khmer women reported that climate change made women work harder in agricultural production to maintain productivity while that did not bring about high efficiency (82%). It took them more time and labor to work in the fields, especially in order to water vegetables during prolonged hot weather and transplant rice seedlings because storms killed young rice plants. Saltwater intrusion indirectly reduced the number of rice crops in a year, resulting in less paid jobs for women (landless farmers) in transplanting and harvesting. It meant that for every crop to be reduced, the women had no rice farming work within their family and no paid jobs for another. Thereby, their income and spending reduced (40% of the total

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<sup>39</sup> Kien Giang Provincial Department of Labor, Invalids, and Social Affairs, Report No. 2005/BC-LĐTBXH dated on September 28, 2021 on saltwater intrusion impacts on vulnerable groups.

<sup>40</sup> Nguyen Hong Tin. 2017. "Strengthening capacity of Khmer women in adapting to climate changes in Tra Vinh province, Vietnam." Mekong Delta Development Research Institute (MDI), Can Tho University (CTU). Project technical report submitted to the Canada Fund for Local Initiatives.

households).<sup>41</sup> That was proved further with the sociology survey on 402 households in Soc Trang and Tra Vinh provinces on saltwater intrusion impacts on employment. The survey results are presented below.



**Figure 13: Saltwater intrusion impacts on employment** <sup>42</sup>

Two noteworthy points from the data are explained below.

*First*, as for direct impacts of saltwater intrusion on employment, particularly more difficulties for work deployment. The survey result shows that for the past five years by the time of the survey, up to 13.4% of the surveyees said that they had had more difficulties in terms of work deployment due to saltwater intrusion. Moreover, up to 9% of the people reported that based on their experience, they would expect that in the next five years, saltwater intrusion would cause more difficulties for them to deploy their work.

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<sup>41</sup> Nguyen Hong Tin. 2017. "Strengthening capacity of Khmer women in adapting to climate changes in Tra Vinh province, Vietnam." Mekong Delta Development Research Institute (MDI), Can Tho University (CTU). Project technical report submitted to the Canada Fund for Local Initiatives.

<sup>42</sup> Source: Data from the Project "Research into Impacts of Climate Change, Natural Disasters, and Human Activities to propose solutions and models for sustainable development in the Hau River basin", Code: BDKH.39/16-2020.



*Second*, as for the indirect impacts, saltwater intrusion made it harder for workers to find jobs due to the direct impacts of saltwater intrusion on production in some certain areas, especially agricultural production. Workers had to find jobs in another province. For example, in Kien Giang, 53.2% of the workers had to work outside the province in 2016 and in 2020, the figure was 47.7%.<sup>43</sup> The survey result also reveals that for the past five years by the time of the survey, just 3% of the surveyees reported that they had more difficulties in finding jobs due to saltwater intrusion. However, it is notable that up to 12.2% of the people reported that based on their experience, they would expect that saltwater intrusion would cause more difficulties for them to find jobs.

*In the nutshell, saltwater intrusion had impacts on a remarkable proportion of surveyed people in Soc Trang and Tra Vinh provinces. The notable point is that we do not have specific data on saltwater intrusion impacts on employment of all vulnerable groups such as poor people, ethnic minority people, women, informal workers, and households with extremely difficult background. However, the data on difficulties in job search and work deployment in the context of climate change of Khmer women in Soc Trang province partly reveals that saltwater intrusion in particular and climate change in general negatively affected a considerable proportion of workers in vulnerable groups, partly because they used to have more difficulties in finding jobs than other social groups. In other words, in the context of saltwater intrusion in particular and climate change in general, as for employment, vulnerable groups are more easily negatively affected than other social groups.*

### **4.3. Saltwater intrusion impacts on income**

According to the survey conducted in Soc Trang and Tra Vinh provinces above, saltwater intrusion had negative impacts on livelihoods of a significant part of local population who did rice farming, fruit tree planting, and aquaculture. Saltwater intrusion also negatively affected their job search and work deployment. As a result, income of the population might be reduced. That was proved with some qualitative data collected from in-depth interviews carried out in Long Phu commune, Long Phu district, Soc Trang province. According to the in-depth interviews, every year, the

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<sup>43</sup> Kien Giang Provincial Department of Labor, Invalids, and Social Affairs, Report No. 2005/BC-LĐTBXH dated on September 28, 2021 on saltwater intrusion impacts on vulnerable groups.

locality had to cope with saltwater intrusion. To avoid saltwater intrusion, people were advised not to cultivate rice in the third crop although its yield might be equal to the combined yield of the two other crops. On the contrary, if the third crop was affected by saltwater intrusion, it would take them five years to recover the damage. Thus, in the province, farmers did not do the third crop. In reality, many farmer households in the province tried not to abandon land yet planting another kind of crop not affected by saltwater intrusion; but they failed. Specifically, many farmer households replaced rice with corn in the third crop but they had to suffer losses.<sup>44</sup> The reality showed that saltwater intrusion made it impossible for farmers to cultivate rice in the third crop or change to plant another kind of crop. As a consequence, their income was reduced.

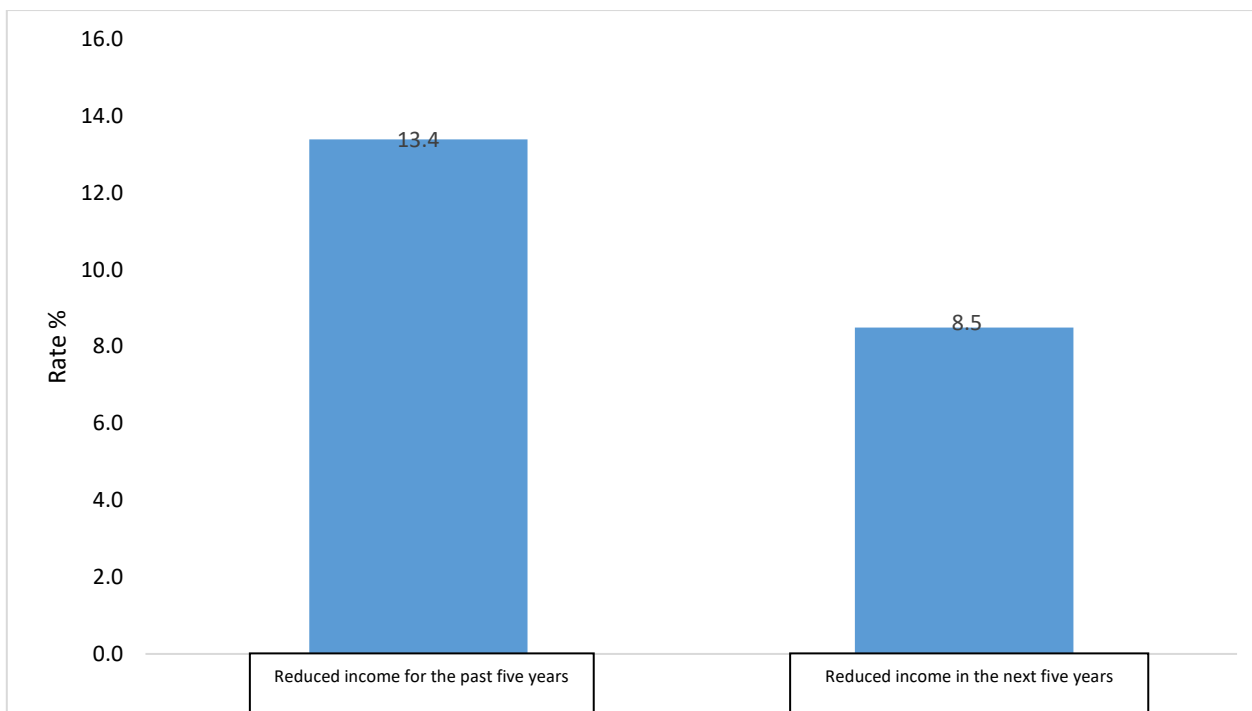
With regards to impacts of saltwater intrusion on income, a research by United Nations Vietnam, Catholic Relife Service, and Save the Children (2020) reveals that saltwater intrusion affected livelihoods and income of women. Women reduced or stopped vegetable cultivation. They had their income also reduced from VND100,000 to VND40,000-45,000 a day from crop farming. If saltwater intrusion lasts 1-2 months, their income will be almost zero. Freelance female workers (landless farmers), paid workers or daily-wage workers had their income reduced due to few local jobs.<sup>45</sup>

As for indirect impacts of saltwater intrusion on income, the survey result of 402 households in Tra Vinh and Soc Trang provinces is presented below.

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<sup>44</sup> Information collected from in-depth interviews with staff in Long Phu commune, Long Phu district, Soc Trang province (Data from the Project "Research into Impacts of Climate Change, Natural Disasters, and Human Activities to propose solutions and models for sustainable development in the Hau River basin", Code: BĐKH.39/16-2020).

<sup>45</sup> United Nations Vietnam, Catholic Relife Service, and Save the Children. 2020. "Vietnam Drought and Saltwater Intrusion in the Mekong Delta - Joint Assessment Report Assessment."



**Figure 14: Negative impacts of saltwater intrusion on income<sup>46</sup>**

The data shows that based on experience of surveyed people, saltwater intrusion had negatively affected their income for the past five years, i.e. reduced income. Up to 13.4% of the surveyees said that for the past five years, their income has been reduced due to saltwater intrusion. In the next five years, about 8.5% of the surveyed people believed that their income would be reduced due to saltwater intrusion. It reveals a considerable proportion of local people were not adaptable to saltwater intrusion to avoid income reduction.

With regards to impacts of saltwater intrusion in particular and other manifestations of climate change in general on income, according to the data from researches of the Canada Fund for Local Initiatives (CFLI)<sup>47</sup> conducted in 2017 in Tra Vinh province, from the perspective of Khmer women, climate change affected all sides of the community life, especially their income. Specifically, up to 27% of surveyees

<sup>46</sup> Source: Data from the Project "Research into Impacts of Climate Change, Natural Disasters, and Human Activities to propose solutions and models for sustainable development in the Hau River basin", Code: BDKH.39/16-2020.

<sup>47</sup> Nguyen Hong Tin. 2017. "Strengthening capacity of Khmer women in adapting to climate changes in Tra Vinh province, Vietnam." Mekong Delta Development Research Institute (MDI), Can Tho University (CTU). Project technical report submitted to the Canada Fund for Local Initiatives.

reported that climate change helped reduce production scale; 51% said that climate change helped reduce product prices; 80% said that climate change helped reduce profits; and 85% reported that climate change helped increase production costs.<sup>48</sup> A research by Nguyen Hong Tin (2017) revealed that 80% of the households on the coast of Tra Vinh province mainly lived on crop production and aquaculture. However, both of the two livelihoods were under serious impact of extreme weather phenomenon such as drought and unusual storms. Meanwhile, prices of agricultural produce were reduced due to lower quality and poorer look of products compared to those in normal conditions (crop products had smaller size and poorer look because of prolonged hot weather). And 27% of the households had to reduce the area of rice cultivation, i.e. reducing from three rice crops to two rice crops in 2016 because prolonged hot weather resulted in water shortage for the crops. That seriously affected life of farmers because rice was the main crop in lowland where natural conditions were not suitable for vegetable crops.<sup>49</sup> In turn, it helped reduce income of the farmers.

*In the nutshell, as explained above, more than one tenth of the surveyees reported that their income had been reduced for the past five years due to saltwater intrusion and nearly one tenth of the people expected that their income would be reduced in the next five years. It also means that vulnerable groups including poor people, ethnic minority people, women, informal workers, and households with extremely difficult background would possibly have their income reduced in the next five years. The notable point is that we do not have data on indirect impacts of saltwater intrusion on income of all mentioned vulnerable groups. However, data on impacts of climate change in general on income from the perspective of Khmer women above also reveals negative impacts of saltwater intrusion in particular and climate change in general on vulnerable groups. This causes more difficulties for a considerable proportion of vulnerable groups.*

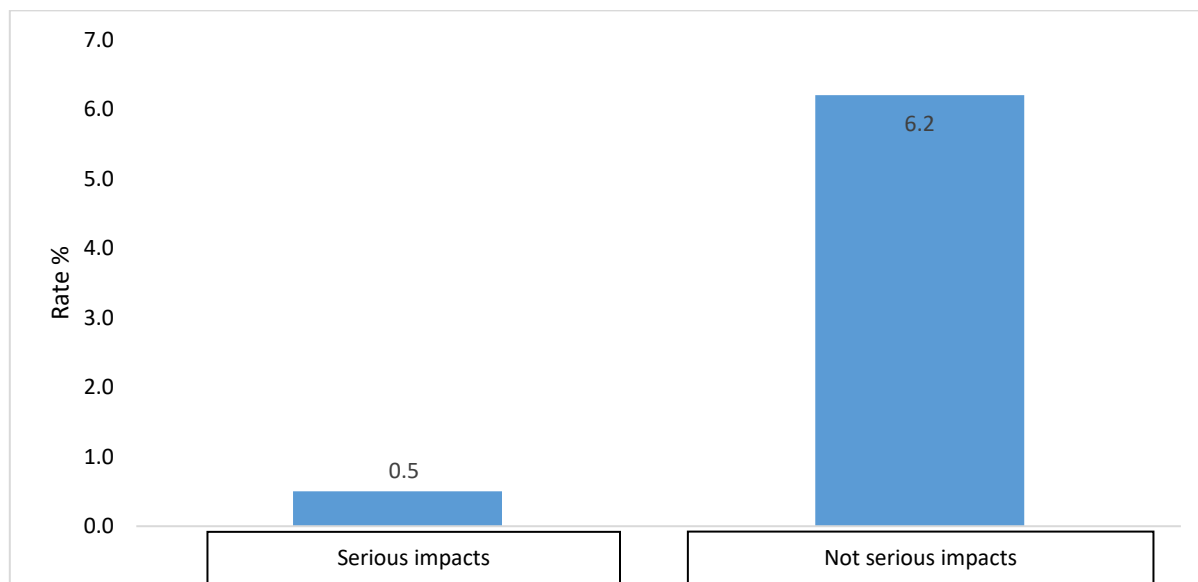
#### **4.4. Saltwater intrusion impacts on daily activities**

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<sup>48</sup> Nguyen Hong Tin. 2017. "Strengthening capacity of Khmer women in adapting to climate changes in Tra Vinh province, Vietnam." Mekong Delta Development Research Institute (MDI), Can Tho University (CTU). Project technical report submitted to the Canada Fund for Local Initiatives.

<sup>49</sup> Nguyen Hong Tin. 2017. "Strengthening capacity of Khmer women in adapting to climate changes in Tra Vinh province, Vietnam." Mekong Delta Development Research Institute (MDI), Can Tho University (CTU). Project technical report submitted to the Canada Fund for Local Initiatives.

One of the concerns is saltwater intrusion impacts on daily activities. The survey result of 402 households in Soc Trang and Tra Vinh provinces in saltwater intrusion impacts on their daily activities is presented in the figure below.



**Figure 15: Saltwater intrusion impacts on daily activities in the past five years<sup>50</sup>**

The data shows that 0.5% of the surveyees said that saltwater intrusion had seriously affected their daily activities for the past five years. Meanwhile, a considerable proportion of the surveyees, 6.2%, reported that saltwater intrusion had affected their daily life but not very seriously. Although the evaluation on saltwater intrusion impacts on daily activities of the households was quite subjective, the data reveals that saltwater intrusion truly negatively affected a remarkable proportion of local population.

In reality, saltwater intrusion impacts on daily activities of local people were mostly in terms of domestic water shortage. Particularly, according to a report of the Department of Social and Environmental Affairs (Ministry of Planning and Investment), in 2020, there were about 96,000 households, i.e. approximately 430,000 people, living in seven coastal provinces including Ben Tre, Soc Trang, Kien Giang, Ca Mau, Bac Lieu, Long An, and Tra Vinh, who had to suffer domestic water

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<sup>50</sup> Source: Data from the Project “Research into Impacts of Climate Change, Natural Disasters, and Human Activities to propose solutions and models for sustainable development in the Hau River basin”, Code: BDKH.39/16-2020.

shortage. Ben Tre province suffered most. In the entire province, from rural to urban area, there was domestic water shortage. It was estimated that 57,000 households suffered from domestic water shortage. Worse, water supply from clean water plants in urban areas in the province had the salinity of more than 2‰. Because water had the salinity of 4-5‰, households had to spend much money on buying freshwater for eating and living. At peak times, local citizens had to buy freshwater at the rate of VND300,000/m<sup>3</sup> from other localities to serve eating and living.<sup>51</sup> When salinity and drought took place in 2016, 5,780 households in Cang Long and Chau Thanh districts of Tra Vinh province were usually lack of domestic water.<sup>52</sup> During salinity and drought in the 2015-2016 year, Kien Giang had 44,256 households in serious shortage of domestic water. Of the figure, the number of vulnerable households, including poor households and policy households, was 5,652.<sup>53</sup> During the salinity and drought in 2020 in Tra Vinh province, 26,572 households ran out of domestic water because the surface water source (rivers) became saline and the groundwater source from shallow wells of the households was depleted.<sup>54</sup> During the salinity and drought in the 2015-2016 year in the Mekong Delta, the total damage due to domestic water shortage was worth about VND500 billion and approximately 600,000 local people were lack of domestic water.<sup>55</sup>

According to Departments of Agriculture and Rural Development of some provinces in the Mekong Delta (Ben Tre, Tra Vinh, Soc Trang) and the research by United Nations Vietnam, Catholic Relief Service, and Save the Children (2020), in early

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<sup>51</sup> Department of Social and Environmental Affairs. 2020. "Saltwater intrusion in the 2019-2020 dry season and its effects on production and daily life in some provinces in the Mekong Delta." *National Centre for Socio-Economic Information and Forecast, Ministry of Planning and Investment* (<http://ncif.gov.vn/Pages/NewsDetail.aspx?newid=22106>). Visited on September 19, 2021.

<sup>52</sup> Tra Vinh Provincial People's Committee. 2020. *Tra Vinh Provincial People's Committee. 2020. "Report on socio-economic situation in February and some key tasks in March 2020."*

<sup>53</sup> Kien Giang Provincial Department of Labor, Invalids, and Social Affairs. 2021. "Report on impacts of saltwater intrusion on vulnerable groups and proposals for revising and improving social security policies in the context of climate change.", *ibid.*

<sup>54</sup> Soc Trang Provincial People's Committee. 2000. "Report on the socio-economic situation in the first quarter and main directions and tasks in the second quarter of 2020."

<sup>55</sup> Nguyen Ngoc Anh. 2016. "Historic drought and salinity in 2016 in the Mekong Delta: Lessons learned and Response solutions." *Vietnam Science and Technology Magazine* (<https://khoahocvacongnghevietnam.com.vn/khcn-trung-uong/13123-han-man-lich-su-2016-o-dong-bang-song-cuu-long-bai-hoc-kinh-nghiem-va-nhung-giai-phap-ung-pho.html>). Visited on May 20, 2019.

February 2020, the number of households under initial impacts of saltwater intrusion increased. In particular, nearly 40,000 households in Ben Tre and Ca Mau provinces were affected; and the figure tended to rise according to the cycle of deep saltwater intrusion. Domestic water use began to decrease; the time for pumping water from deep wells was longer while shallow wells had no water; freshwater storage systems of households (ceramic jars, etc.) and freshwater canals dried up. At that time, local people had to accept to buy freshwater at high rates, i.e. VND10,000-13,000/gallon water container or VND200,000-300,000/m<sup>3</sup>. Many households had to reduce washing or bathing to save water and gave priority to cooking, which caused numerous difficulties in their daily life.<sup>56</sup> In Kien Giang, the local freshwater supply system could provide domestic water for local households. However, saltwater intrusion affected 20,000 people. Because of water shortage, local people found it hard not only in production but also in handling livestock waste (cleaning barns). Accordingly, it imposed higher risks of environmental pollution and disease infection, which affected health and life of local people.<sup>57</sup>

Also according to the research by United Nations Vietnam, Catholic Relife Service, and Save the Children (2020), saltwater intrusion affected education. Departments of Education and Training of Kien Giang and Tra Vinh provinces said that saltwater intrusion impacts on education were not obvious. However, they reported that class attendance of students in the regions affected saltwater intrusion reduced; their semester examination result was also poorer than that of students in other regions. The departments believed that that saltwater intrusion negatively affected the livelihoods caused indirect impacts on the students. In addition, freshwater for daily activities and hygiene of students was also limited, which affected their psychology, health, and learning attitude. In Ca Mau and Ben Tre, the research by United Nations Vietnam, Catholic Relife Service, and Save the Children (2020) found that saltwater intrusion helped reduce water supply for schools, making toilets dirty. So, it affected psychology of students at school. Furthermore, parents focused on combating saltwater intrusion and neglected their children.<sup>58</sup> Therefore, domestic water

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<sup>56</sup> United Nations Vietnam, Catholic Relife Service, and Save the Children. 2020. "Vietnam Drought and Saltwater Intrusion in the Mekong Delta - Joint Assessment Report Assessment."

<sup>57</sup> United Nations Vietnam, Catholic Relife Service, and Save the Children. 2020. "Vietnam Drought and Saltwater Intrusion in the Mekong Delta - Joint Assessment Report Assessment."

<sup>58</sup> United Nations Vietnam, Catholic Relife Service, and Save the Children. 2020. "Vietnam Drought and Saltwater Intrusion in the Mekong Delta - Joint Assessment Report Assessment."

shortage due to saltwater intrusion not only directly affected daily activities of households in the Mekong Delta but also indirectly affect education of local students.

*In the nutshell, saltwater intrusion negatively affected a considerable proportion of households, i.e. causing domestic water shortage. Because of domestic water shortage, they had to buy domestic water, which made their life much more difficult, not to mention that it cost them more time and labor in buying domestic water. We did not have data on impacts of saltwater intrusion on daily activities of vulnerable groups including poor people, ethnic minority people, women, informal workers, people with disabilities, and households with extremely difficult backgrounds. However, the data above revealed that a considerable proportion of households in the Mekong Delta had to cope with difficulties in daily life, mainly due to domestic water shortage as a result of saltwater intrusion. Given that fact, vulnerable groups would find it much more difficult when saltwater intrusion caused domestic water shortage for daily activities. Moreover, domestic water shortage due to saltwater intrusion indirectly affected education of local students because it worsened livelihoods of their family. In addition, domestic water shortage due to saltwater intrusion also affected psychology of the students at school.*

#### **4.5. Saltwater intrusion impacts on health**

Climate change in general and saltwater intrusion in particular affects health of people, which is one of the concerns. The data from researches of the Canada Fund for Local Initiatives (CFLI)<sup>59</sup> conducted in 2017 in Tra Vinh province indicated that when agriculture was affected by climate change, women had to work harder. Harsh weather conditions due to climate change directly affected health of family members, especially women, elderly people, and children. The research showed that up to 85% of the surveyees said that climate change affected health of their family member.<sup>60</sup>

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<sup>59</sup> Nguyen Hong Tin. 2017. "Strengthening capacity of Khmer women in adapting to climate changes in Tra Vinh province, Vietnam." Mekong Delta Development Research Institute (MDI), Can Tho University (CTU). Project technical report submitted to the Canada Fund for Local Initiatives.

<sup>60</sup> Nguyen Hong Tin. 2017. "Strengthening capacity of Khmer women in adapting to climate changes in Tra Vinh province, Vietnam." Mekong Delta Development Research Institute (MDI), Can Tho University (CTU). Project technical report submitted to the Canada Fund for Local Initiatives.



Through online in-depth interviews with local people in the Mekong Delta<sup>61</sup> and data from the research by United Nations Vietnam, Catholic Relief Service, and Save the Children (2020), saltwater intrusion truly affected women. In regions having saltwater intrusion, women, including adults and girls, had to invest more money and time to access water supply for their daily activities such as drinking, cooking, and bathing and taking care of family members. Women had to spend time checking salinity of water to assure it was safe for cooking and so on both day and night. Women played a crucial role in doing housework and hygiene. Thus, if water becomes saline, they will be under its direct impact. The more time they invest in combating saltwater intrusion, the harder they feel.<sup>62</sup> In addition, according to the research by United Nations Vietnam, Catholic Relief Service, and Save the Children (2020), clean domestic water shortage due to saltwater intrusion affected health of women and children. In specific, saltwater intrusion caused skin diseases and developed symptoms of infection, especially for women and children. In the long-term, it would affect their health and psychology. A number of women were lack of clean water for bathing. Thus, they had to bath in ponds or by wells at night, which resulted in higher risks of abuse or harassments.<sup>63</sup>

Saltwater intrusion also affected children. Because of saltwater intrusion, many families had to migrate to look for jobs, leaving their children behind for elderly people to take care. According to the research by United Nations Vietnam, Catholic Relief Service, and Save the Children (2020), quite a few people at the working age in Kien Giang and Tra Vinh province migrated to neighboring provinces or Ho Chi Minh City where they could find jobs not requiring skilled labor. The purpose was to earn money so that they could repay debts after lost crops in 2020 due to saltwater intrusion 2020.<sup>64</sup> When parents became migrant workers, children were lack of parental affection, emotional attention and physical investment. Young spouses often sent their children to their parents (grandparents). Every month, they worked and sent money back home to cover their children's life. Despite this, the children

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61 United Nations Vietnam, Catholic Relief Service, and Save the Children. 2020. "Vietnam Drought and Saltwater Intrusion in the Mekong Delta - Joint Assessment Report Assessment."

62 United Nations Vietnam, Catholic Relief Service, and Save the Children. 2020. "Vietnam Drought and Saltwater Intrusion in the Mekong Delta - Joint Assessment Report Assessment."

63 United Nations Vietnam, Catholic Relief Service, and Save the Children. 2020. "Vietnam Drought and Saltwater Intrusion in the Mekong Delta - Joint Assessment Report Assessment."

64 United Nations Vietnam, Catholic Relief Service, and Save the Children. 2020. "Vietnam Drought and Saltwater Intrusion in the Mekong Delta - Joint Assessment Report Assessment."

were lack of direct instructions from their parents, which distracted their physical and psychological development, and their future behaviors.<sup>65</sup> Thus, saltwater intrusion indirectly affected health of children.

*In the nutshell, climate change in general and saltwater intrusion in particular negatively affected health of a proportion of population in the Mekong Delta, especially women and children. Saltwater intrusion impacts on health of women and children were shown in three aspects. First, saltwater intrusion made people, especially women, pay more effort to access domestic water supply for daily activities such as drinking, cooking, washing, bathing, and taking care of family members. Because of working harder, their health was affected. Second, domestic water shortage due to saltwater intrusion, or use of saline water, or use of unsanitary alternative water source caused them have skin infectious diseases or infections, especially for women and children. Third, saltwater intrusion pushed a proportion of workers to migrate and earn a living in another province. As a result, many couples had to leave their children home for grandparents to take care. That might cause negative impacts on physical and mental health of the children.*

## **5. Existing social security policies and policy gaps in supporting vulnerable groups due to climate change impacts (saltwater intrusion)**

### **5.1. Labor - employment and vocational education policy**

In the period of 2011 – 2020, after the National Assembly adopted the Labor Code, MOLISA coordinated with related agencies to develop, submit, and promulgate relatively sufficient legal documents guiding the implementation of the Law on Vocational Training, the Law on Education, the Law on Higher Education, the Labor Code, the Employment Law, and other relevant laws; developed and submitted to the Prime Minister for approving the Vocational Training Development Strategy for the period of 2011-2020 (Decision No. 630/QĐ-Ttg dated on May 29, 2012) and many programs and projects such as the vocational training project for rural laborers, the project on vocational training for demobilized soldiers, the project on developing high-quality vocational schools by 2020. Many mechanisms and policies for different

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<sup>65</sup> United Nations Vietnam, Catholic Relief Service, and Save the Children. 2020. "Vietnam Drought and Saltwater Intrusion in the Mekong Delta - Joint Assessment Report Assessment."

groups of learners, teachers, and vocational training centers, etc. have been promulgated in accordance with practical requirements.

The 2013 Employment Law and the system of 27 effective guiding documents on employment (10 Decrees, 2 Decisions of the Prime Minister, and 15 Circulars) regulate labor and employment policies on labor force as a whole. This is an important basis for developing support policies for disadvantaged workers, poor workers, rural workers, unemployed workers, and increasing employment opportunities for informal workers; supporting disadvantaged workers to find jobs and access jobs through the development of a system of employment service centers, job creation credit, public employment policies, vocational skill development, and unemployment insurance.

Policies to support job creation focus on (i) preferential credit policies for job creation from the National Employment Fund and other credit sources; (ii) policies to support job transition for workers in rural areas, public employment policies; (iii) support policies for sending workers to abroad under contract, creating jobs for young people and disadvantaged groups such as people with disabilities, poor people, ethnic minority people and people in remote area; (v) unemployment insurance policy including the following regimes: support and counselling, job placement, vocational training support, support for professional education, training, and improvement to help maintain jobs for workers, unemployment benefits; (v) policies to support the development of labor market, labor market information and connection between labor demand and supply such as: focusing on supporting the development of labor market information system, collecting, archiving, and providing labor market information, analyzing and forecasting labor market; connecting labor supply and demand and capacity building for employment service organizations in providing employment services.

In parallel with the Employment Law, the Law on Vocational Education promulgated in 2014 helped establish a vocational education system within the national education system, which includes three levels of training, i.e. elementary, intermediate, and college, in order to meet the requirements for human resource structure for the economic development in the new period. Many new and breakthrough contents that are close to vocational education of developed countries in the world are included in the Law on Vocational Education. The Law on Vocational

Education also has regulations on mechanisms and policies on vocational training for rural workers, poor people, people with disabilities, ethnic minority people and other disadvantaged groups. The Law on Vocational Education also has regulations on policies on vocational education institutions for people with disabilities. Vocational education institutions for people with disabilities, besides being under general policies for vocational training centers, receive financial support from the State to invest in teaching facility and equipment; they are assigned with land and entitled to rent land to build non-business constructions in convenient places for the learning of people with disabilities. To implement the Law on Vocational Education, by the end of 2020, 104 legal documents on vocational education had been promulgated (6 Decrees, 1 Directive of the Prime Minister, 8 Decisions of the Prime Minister, 85 Circulars, and 4 Joint Circulars) with policies on renewing organization and training activities, mechanisms and policies prioritizing teachers and learners, etc. Action programs, target programs, contents and plans are concretized from the Law on Vocational Education, including mechanisms and policies related to target groups of the programs.

Based on the legal provisions, the Government has promulgated and organized many big projects and programs throughout the country such as: the Target Program for Vocational Education, Employment and Occupational Safety for the period of 2016-2020; the National Target Program for Sustainable Poverty Reduction for the period of 2016-2020 (that for the period of 2021-2025 has been approved by the National Assembly); the National Target Program for Building New Rural Area for the period of 2010-2020 (on July 28, 2021, the National Assembly approved Resolution approving the policy on investing the National Target Program for Building New Rural Area for the period of 2021-2025); the Vocational Training Project for Rural Workers until 2020; established the National Employment Fund (since 1992) to support job creation through credit projects with preferential interest rates; established the Overseas Employment Fund (2007) in order to develop and expand the overseas labor market, improve quality of labor resources, and assist to deal with risks for workers and enterprises; established and developed a system of public employment service centers.

Relevant agencies have promulgated policies on tuition fee exemption and reduction, credit policies, employment policies, and policies to support the

vocational training for disadvantaged learners; policies to attract participation of enterprises in the vocational education development system, etc.). Poor people, ethnic minority people, people with disabilities are exemption from tuition fees when attend vocational training courses, ethnic minority students in boarding schools are entitled to the same policies as high school students in boarding schools for ethnic minorities. Rural laborers who have vocational training under 12 months are supported according to Decision No. 1956/QĐ-TTg dated on November 27, 2009 (Scheme 1956). Mechanisms and policies on vocational training do not distinguish between regions; if learners are in the same groups, they will all enjoy the same benefits. Thus, learners in the Mekong Delta in general and the regions with saltwater intrusion in particular, if they are target groups of vocational training policies, will all be beneficiaries of the polices.

According to the General Department of Vocational Education and Training (2021), by the end of 2020, there were 1,911 vocational education institutions (410 colleges, 444 intermediate schools and 1,057 vocational training – continual education centers, in which there were 688 private vocational education institutions and foreign-invested vocational training institutions (accounting for 36%). It can be said that the network of vocational education institutions has developed nationwide, diversified in training types, levels and operating models. All provinces and centrally-run cities have had vocational intermediate schools and colleges. Vocational training for rural laborers under Scheme had been promoted. During 11 years of implementing the Scheme (2010 - 2020), the country had more than 9 million rural laborers receiving vocational training, fulfilling 91% of the target. In specific, nearly 5.2 million people were provided with vocational training according to the policies of the Scheme, reaching 73.5% of the plan.<sup>66</sup> In terms of training for disadvantaged people (people with disabilities), it was mainstreamed in the Scheme “Vocational Training for Rural Laborers”. It was applied with the “training on job” method. The model of direct vocational training by enterprises was piloted so that enterprises could recruit people with disabilities; and product consumption contracts were signed.

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<sup>66</sup> General Department of Vocational Education. 2021b. Draft Strategy for Vocational Education Development in the period of 2021-2030."

*Limitations and gaps in policies, the implementation of policies on employment and vocational education related to laborers affected by saltwater intrusion in particular and climate change in general are as follows.*

*First*, the National Employment Fund has clarified borrowers as small and medium enterprises (SMEs), cooperatives, cooperative groups, business households and laborers; laborers going aboard to work under contract; ethnic minority people living in areas with extremely difficult socio-economic conditions, people with disabilities<sup>67</sup> but not specified borrowers as poor households, near-poor households, newly escaped poverty households, and people with disabilities, etc. Meanwhile, they are the subjects that need access to the credit from the Fund to create, expand, and maintain jobs most in the context of saltwater intrusion.<sup>68</sup> In addition, the loans of the Fund are limited, i.e. the annual State budget allocation to the Fund is very poor. According to a report of the Vietnam Bank for Social Policies (VBSP), up to September 30, 2019, the loans from the National Employment Fund were worth more than VND4.5 trillion, accounting for 25% of the total loans for job creation.

*Second*, based on assessment of saltwater intrusion impacts on rice cultivation, fruit tree planting and aquaculture specified in section 4.1 of the report, for the past time, the Government has issued Decree No. 02/2017/NĐ-CP dated on January 9, 2017 on mechanisms and policies to support agricultural production to restore production in regions affected by natural disasters and epidemic (including saltwater intrusion). The new Decree regulates the support for damage to crops, livestock and fisheries to restore agricultural production without considering on-spot job creation associated with agricultural production after damage. Meanwhile, according to the analysis of the report, saltwater intrusion helped reduce cultivated area and productivity, increase labor and investment costs, not to mention totally

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<sup>67</sup> The National Assembly. 2013. "Law on Employment." *LuatVietnam* (<https://luatvietnam.vn/lao-dong/luat-38-2013-gh13-quoc-hoi-83318-d1.html>). Visited on May 20, 2021.; The Government. 2015. "Decree on policies to support job creation and the National Employment Fund." *Luat Vietnam* (<https://luatvietnam.vn/lao-dong/nghi-dinh-61-2015-nd-cp-chinh-phu-96238-d1.html>) Visited on October 14, 2021.

<sup>68</sup> Son Dung. 2019. "Outstanding credit results from the National Employment Fund." *Communist Party of Vietnam E-newspaper* (<https://dangcongsan.vn/thong-tin-kinh-te/nhung-ket-qua-noi-bat-tu-von-vay-quy-quoc-gia-giai-quyet-viec-lam-545029.html>). Visited on October 14, 2021.

lost crops and impossibility of continuing rice cultivation, fruit tree planting and aquaculture, and part of the population had to migrate to find jobs.

*Third*, employees participating in unemployment insurance in Article 43 of the Employment Law have not covered all employees with labor contracts from full 1 month to less than 3 months. These employees are often poor people, ethnic minority people, paid workers, and migrant workers, etc.) and they are usually unaware of or have good insights into the significance of signing a labor contract; instead, they just work and get paid but do not participate in insurance.

*Fourth*, many mechanisms and policies for learners, teachers, and vocational training institutions, etc. are promulgated in line with practical requirements. However, the policies that make up employment and vocational education policies do not have specific regulations on vocational training for laborers who wish to change careers due to negative impacts of saltwater intrusion in particular and climate change in general. As mentioned above, a considerable part of workers in the Mekong Delta are negatively affected by saltwater intrusion in particular and climate change in general. Due to the negative impacts of saltwater intrusion, the livelihoods of rice cultivation, fruit tree planting, and aquaculture of many households are affected. In that context, they need to be trained to respond to saltwater intrusion and improve existing livelihoods, or switch to another livelihood that better suits for the condition. However, there are no specific regulations on laborers whose livelihoods are under impacts of climate change in general and saltwater intrusion in particular. This is a gap in labor-employment policies in the context of climate change and natural disasters.

*Fifth*, the distribution of vocational education institution network is still inadequate among regions. In the Mekong Delta, there are 233 vocational education institutions, in which non-public institutions account for 23%. Even in each region, the distribution of vocational education institutions is inadequate. Vocational education institutions are mostly concentrated in urban area, big cities, while there are few in rural and coastal areas.<sup>69</sup> At the same time, the rate of trained workers in urban area is 40.8%, 2.5 times higher than that in rural area (16.6%). The rate of

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<sup>69</sup> General Department of Vocational Education. 2021a. "Report on assessment of the current situation of vocational education and vocational training development strategy for the period of 2011-2020."

trained workers with qualifications in urban area is 39.9%, while that in rural area is just 16.3%.<sup>70</sup> This poses difficulties for vocational training for workers in rural area, especially those associated with rice cultivation, fruit tree planting, and aquaculture affected by climate change in general and saltwater intrusion in particular who wish to change careers or improve production skills to respond to saltwater intrusion. This is another gap in the implementation of labor-employment policies in the context of climate change in general and saltwater intrusion in particular.

*Sixth*, vocational training for disadvantaged groups and ethnic minority groups is not given due attention. The rate of ethnic minority people participating in vocational training is very low. As for vocational education enrollments, the percentage of ethnic minority learners is about 7.5%, most of whom attend less-than-three-month vocational training courses (nearly 50%). When it comes to other disadvantaged groups such as people with disabilities or ethnic minority people, despite certain support policies, the implementation of the policies is not effective. The rate of female learners is just 25.5%. Among women participating in vocational education, just 10% of them finish the college level.<sup>71</sup> The fact shows that in the context of climate change and natural disasters in general and saltwater intrusion in particular, vulnerable groups have fewer chances in education and training to switch to another livelihoods that are more suitable and responsive to climate change. Meanwhile, vulnerable groups such as poor people, ethnic minority people, women, informal workers, and households with extremely difficult backgrounds are easily affected by saltwater intrusion in particular and climate change in general.

## ***5.2. Poverty reduction, social assistance, and social insurance policies***

### ***Poverty reduction and social assistance policies***

For the past years, poverty reduction has become a fundamental and throughout policy that is constantly updated and supplemented in the policy system for socio-economic development of Vietnam. The sustainable poverty reduction policy is reflected in many documents of the Party and concretized by the system of policies and laws of the State. The 10-year Socio-Economic Development Strategy (2021-

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<sup>70</sup> General Department of Vocational Education. 2021a. "Report on assessment of the current situation of vocational education and vocational training development strategy for the period of 2011-2020."

<sup>71</sup> National Institute for Vocational Training. 2021. "Thematic Report: Inclusive Development in Vocational Education."



2030) defines the need to “synchronously implement multi-dimensional, sustainable and inclusive poverty reduction solutions, especially in the ethnic minority areas. Continuing the National Target Program for Sustainable Poverty Reduction. Substantially renewing the approach to poverty reduction with conditional support policies, reduction of unconditional support, arousing the will to take initiative to get out of poverty; eliminating social inequality”.

Poverty reduction policies have been promulgated and basically covered all areas of life and society. Specifically, they are credit policies, the policies on exemption and reduction of land use fees and support for production, production land and afforestation; the policies to support land and means of production, create conditions for poor people to use land for production in combination with providing vocational training, creating new jobs and change careers; the policies to support poor households with production land and means of production so that poor people can stabilize their life and sustainably get out of poverty; supporting poor people with occupational skills to find jobs and increase income through short-term vocational training courses; the vocational training and job creation policies; the policies to support housing and domestic water; the policies to support education and training; the policies of exemption and reduction of tuition fees; the policies of medical and health care; the legal assistance and information support policies. The comprehensive poverty reduction policies for poor people have been issued synchronously, and sufficiently covering areas such as health insurance, exemption and reduction of tuition fees, housing, clean water and sanitation, vocational training, labor and employment, legal assistance, social assistance, preferential credit loans, the settlement of residential land, production land and forest allocation. The State has step by step reduced and dismissed unconditional support policies, increased support policies with reimbursements and specific conditions for specific beneficiaries, area, and time. The policies are regulated in many different legal systems and complement each other such as: laws on finance and banking (in terms of preferential credit loans: Decision No. 12/QĐ-HĐQT dated on February 22, 2019 of the Board of Directors of VBSP, Decision No. 27/2019/QĐ-TTg dated on September 9, 2019 of the Prime Minister), laws on land and exemption and reduction of land use fees (the 2013 Land Law; Decree No. 45/2014/NĐ-CP dated on May 15, 2014 of the Government, Decree No. 75/2015/NĐ-CP dated on September 9, 2015 of the Government, etc.), laws on vocational training and job creation (as

detailed in section 5.1), laws on housing, education, medical and health care, legal assistance and information support (the focus is the Law on Access to Information and Law on Legal Aid, etc.).

In parallel with poverty reduction policies, for many years, the Party and the State have always paid attention to the development and implementation of social policies in general (in a narrower scope: social assistance policies). This is considered an objective yet a motivation to achieve sustainable development and socio-political stability. The system of laws and policies for the development of social areas has been supplemented and completed. The range of beneficiaries is expanding and the level of support is increasing. The issue is also reflected in from the major policies of the Party detailed in Resolution No.15-NQ/TW dated on June 1, 2012 on a number of issues of social policies for the period of 2012-2020, to specific policies institutionalized in legal documents, regulating specific objects of social assistance policies such as: laws on elderly people (the 2009 Elderly People Law and its guiding document system), laws on children and people with disabilities, the policies for HIV-infected people, landmine victims, children with extremely difficult background, victims of toxic chemicals and the policies and legal regulations on social assistance centers, the development of social works, etc.

Social assistance work has a lot of meaning from different perspectives and in different contexts. In terms of economic meaning, social assistance is the ultimate “safety net” to assure people’s minimum living and create opportunities for the objects to deal with risks and push poverty away. In terms of social meaning, social assistance is a measure of active support for members of society when they encounter risks and misfortunes in order to stabilize society. In terms of legal meaning, social assistance is the concretization of policies of the Party and the State to assure human rights. Social assistance must ensure the following principles: (i) social assistance policies must be implemented in a timely, fair, public and transparent manner and according to the level of difficulty and priority for family, the community of the target objects; (ii) social assistance regimes and policies shall be adjusted depending on the country’s economic conditions and people’s minimum living standards from time to time; (iii) the State encourages and facilitates agencies, organizations and individuals to nurture, take care, and support target objects of social assistance. The principles are reflected in Decree No. 20/2021/NĐ-CP dated

on March 15, 2021 of the Government regulating social assistance policies for beneficiaries of social protection. Decree No. 20/2021/NĐ-CP and the guiding documents have been timely issued by MOLISA (Circular No. 02/2021/TT-BLĐTBXH dated on June 24, 2021 guiding the implementation of a number of articles of Decree No. 20/2021/NĐ-CP; Decision No. 635/QĐ-LĐTBXH on announcement of administrative procedures for admendment, supplementation and annulment in social protection field within the scope of State governance of the Government of MOLISA), of Ministry of Finance (Circular No. 76/2021/TT-BTC dated on September 15, 2021 guiding Clause 1 and 2, Article 31, Decree No. 20/2021/NĐ-CP) helped the social assistance policies quickly put into practice, ensuring the consistency, synchronism and feasibility of legal polices.

Social assistance policies prescribed in Decree No. 20/2021/NĐ-CP targeting the following beneficiaries: children under 16 years old receiving no nurture; individuals with severe disabilities; children from 16 to 22 years old who are pursuing formal education, vocational education, professional secondary education, college education or first higher education degrees receiving no nurture; children with HIV living in poor households; single mothers/fathers in poor households who are raising children; children with disabilities, people with disabilities. Compared with Decree No. 136/2013/NĐ-CP, Decree No. 20/2021/NĐ-CP has expanded and covered more beneficiaries of the regular social assistance. Contents/characteristics of the social assistance regime include: regular social assistance regime and unscheduled social assistance regime. In addition, Decree No. 20/2021/NĐ-CP has created a flexcible mechanism for localities, depending on local socio-economic conditions of provinces and centrally-run cities to decide to supplement disadvantaged people in the area as policy beneficiaries; and to decide the level of social assistance to be higher than the minimum rate depending on local socio-economic conditions. The Decree also adjusted methods and measures of making policy payments to meet practical requirements, and apply IT and use banking services to settle the payments to ensure flexibility and practicality.

The Prime Minister has approved the “Master Plan for Social Assistance Reform and Development for the period of 2017-2025 with a vision to 2030” which outlines perspectives of completing policies and laws on social assistance including studying and proposing to improve social assistance towards expanding ranges of

beneficiaries according to specific objectives of the Master Plan, studying and developing standard levels of social assistance and social assistance coefficients based on minimum needs of people, life cycle and ensuring international integration.

As for results of social assistance work, in the period of 2016-2020, the Government provided 167,749 tonnes of rice to relieve hunger for nearly 9.5 million people (in 2019 alone, providing 18,850 tonnes to 1.2 million) and every year, thousands of billions of VND were allocated to handle consequences of natural disasters. During 2017-2020, localities mobilized VND9.268 trillion to support poor people and people with extremely difficult backgrounds on the occasion of Lunar New Year. Unscheduled social assistance was implemented synchronously from the central to local levels, ensuring the principle of “four on-the-spot motto” and meeting requirements in a timely, public and transparent manner so that people in need of relief receive necessary support.<sup>72</sup> Regarding poverty reduction policies which have been implemented, the poverty rate was down from 9.88% in 2015 (first year of the term) to 2.75% in 2020 (last year of the term), an average decrease of 1.43%/year (target: 1-1,5%/year), the rate of poor ethnic minority households decreased by 4%/year (target: 3- 4%), more than 8 million people got out of poverty and near-poverty; the rate of poor households in poor districts by the end of 2020 was 23.42%, an average decrease of 5.4%/year (target: 4%/year); 32 poor districts got out of extremely difficult situations, 125 extremely difficult communes in coastal areas and islands met new rural standards; many sound examples of getting out of poverty<sup>73</sup>.

The above-mentioned legal regulations and policies on poverty reduction have promoted their role in supporting workers in poor households to develop production, have stable jobs, increase income and escape poverty sustainably. Implementing poverty reduction policies is a major policy of the Party and the State in order to improve the material and spiritual life of poor people, contributing to

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<sup>72</sup> Le Son. 2021. "VND75 trillion to invest in the Poverty Reduction Program for the period of 2021-2025." Government E-Newspaper of the Socialist Republic of Vietnam (<http://baochinhphu.vn/Thoi-su/75-nghin-ty-dau-tu-cho-Chuong-trinh-giam-ngheo-giai-doan-20212025/439487.vgp>). Visited on October 14, 2021.

<sup>73</sup> Le Son. 2021. "VND75 trillion to invest in the Poverty Reduction Program for the period of 2021-2025." Government E-Newspaper of the Socialist Republic of Vietnam (<http://baochinhphu.vn/Thoi-su/75-nghin-ty-dau-tu-cho-Chuong-trinh-giam-ngheo-giai-doan-20212025/439487.vgp>). Visited on October 14, 2021.

narrowing the gap in living standards between rural and urban areas, among regions, ethnic groups and residential groups, demonstrating strong determination in implementing the Millennium Development Goals of the United Nation that Vietnam committed to.

*Limitations and gaps in poverty reduction and social assistance policies are as follows.*

First is awareness of social assistance. According to MOLISA, more than 20% of the population are in need of social assistance. Of the figure, there are 9.2 million elderly people, 7.2 million people with disabilities, 1.5 million children with special backgrounds, 1.8 million households in need of unscheduled social assistance every year (due to natural disasters, fire and lost crops, etc.), 234,000 HIV-infected people, 204,000 drug-addicted people, more than 48,000 sex workers; about 30,000 victims of domestic violence and abuse.<sup>74</sup> In addition, many women and children are abused, trafficked, sexually assaulted or wander on street to earn a living, not to mentioning to a number of people in need of social assistance because life pressure causes them psychological damage, so they cannot perform their social functions.<sup>75</sup> These are a challenge for social development in terms of ensuring the right of welfare of people in general and disadvantaged people in particular in an effective and professional manner. Currently, there are inappropriate perspectives and understandings about social assistance work, i.e. social assistance is material supports and subsidies through the Government's programs and projects.

*Hai là*, basic policies to help people escape and reduce poverty have been institutionalized. Despite this, the legal adjustment is fragmented, asynchronous and inconsistent among policies.<sup>76</sup> According to the statistics, poverty reduction policies are regulated in 37 different legal documents (including 9 laws and resolutions of the National Assembly, 18 decrees and and decisions of the Prime Minister, and 10

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<sup>74</sup> Nguyen Thi Thai Lan. 2016. "Renovating social assistance system." *Nhan Dan Weekend Newspaper* (<https://nhandan.vn/chuyen-de-cuoi-tuan/doi-moi-he-thong-tro-giup-xa-hoi-267943>). Visited October 14, 2021.

<sup>75</sup> Nguyen Thi Thai Lan. 2016. "Renovating social assistance system." *Nhan Dan Weekend Newspaper* (<https://nhandan.vn/chuyen-de-cuoi-tuan/doi-moi-he-thong-tro-giup-xa-hoi-267943>). Visited October 14, 2021.

<sup>76</sup> We research, synthesize, and list poverty reduction policies stipulated in 37 different legal documents (including 9 laws, resolutions of the National Assembly; 18 decrees and decisions of the Prime Minister, and 10 circulars)

circulars). Poverty reduction laws and policies have created a dense legal system of different kinds of legal documents including laws, decrees, decisions, directives, and circulars, etc. This makes the application, dissemination and propaganda of the laws and policies very difficult.

*Third*, the current poverty reduction policy system does not have policies that prioritize to support workers in poor, near-poor, and newly escaped poverty households, etc. when they have to cope with climate change in general and saltwater intrusion in particular. The current policies for poverty reduction and sustainable poverty reduction in the National Target Program for Sustainable Poverty Reduction mainly focus on supports in credit, production development, livelihoods diversification, education and training, housing and medical support. The objective of the policies is towards natural disaster risk reduction and climate change adaptability. However, up to now, there have been no specific policies to directly support workers from poor, near poor, and newly escaped poverty households when they cope with climate change in general, and especially when saltwater intrusion becomes more urgent. Currently, Decree No. 02/2017/NĐ-CP dated on January 9, 2017 on mechanism and policies for supporting agricultural production to restore the production in regions affected by natural disasters and epidemics just benefits farmer households, aquaculture farmers, salt farmers, farm owners, animal farm owners, cooperative groups, cooperatives in cultivation, forestry, animal husbandry, aquaculture and salt production (hereinafter referred to as production households) directly affected by natural disasters, epidemics, etc. but contains no specific regulations on saltwater intrusion and other manifestations of climate change.

### ***Social Insurance***

Social insurance policy in Vietnam includes compulsory social insurance and voluntary social insurance. According to Article 4 of the Law on Social Insurance 2014, the compulsory social insurance covers the following regimes: (1) sickness; (2) maternity; (3) labor accident and occupational disease; (4) retirement; and (5) survivorship allowance. The regimes of sickness, labor accident and occupational disease, and the survivorship allowance are very important for workers in the high-risk areas (in this research, the high-risk area is saltwater intrusion and drought due

to climate change) because they relate to health and diseases. According to the Law on Social Insurance 2014, the voluntary social insurance covers two regimes: retirement and survivorship allowance. Voluntary social insurance participants are prescribed as Vietnamese citizens aged full 15 years or older and not covered by compulsory social insurance. Thus, voluntary social insurance targets informal workers and disadvantaged workers better. However, in reality, informal workers have little access to voluntary social insurance.<sup>77</sup>

According to MOLISA (2019), the coverage rate of social insurance is just 31.9% of the labor force in the working age, equivalent to 15.774 million people. Meanwhile, the number of the voluntary social insurance participants is just 574,00078. Due to the limitation, when confronting severe shocks such as work stoppage, unemployment due to natural disasters (saltwater intrusion and drought, etc.), a number of workers, especially the informal workers and the disadvantaged workers do not receive benefits from the social insurance system. To help people to respond to income risks in case of natural disasters, the Government has had policies to support people to participate voluntary social insurance. As regulated at Clause 1, Article 87, the Law on Social Insurance 2014,: “1. Employees defined in Clause 4, Article 2 of this Law shall monthly pay an amount equivalent to 22% of their monthly incomes as selected to the retirement and survivorship allowance fund; the monthly income on which social insurance premiums are based must at least equal the poverty threshold in rural areas and must not exceed 20 times the basic salary. The socio-economic development conditions and the State budget capacity in each period shall be based on to determine the levels of support for payment of social insurance premiums for employees covered by voluntary social insurance, support beneficiaries, and the time for implementing the support policy”. In addition, in Decision No. 595/QĐ-BHXH dated on April 14, 2017 of Vietnam Social Security, Article 12 stipulates that participants in voluntary social insurance shall receive the State’s assistance with insurance contributions in percentage (%) of monthly social

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<sup>77</sup> MOLISA, and GIZ. 2020. "Report on review and assessment of the adaptability of the legal system in the context of the Covid-19 pandemic (in particular) and the situation of natural disasters and epidemics in general."

<sup>78</sup> Social Insurance Department, Ministry of Labor, Invalids, and Social Affairs. 2019. "Report of Social Insurance Department, Ministry of Labor, Invalids, and Social Affairs."

insurance contributions based on the poverty line in rural areas. (30% for the participant who is in a poor household; 25% for the participant who is in a near-poor household; 10% for other participants). The monthly social insurance contributions (up to VND150,000/month/participant) are not high compared to the income of informal workers currently. However, voluntary social insurance has not yet attracted participants because the benefits are not attractive (covering just two regimes of retirement and survivorship allowance). On the other hand, although the voluntary social insurance policy does not discriminate against subjects, regions, areas, people's access to social insurance services and understanding of social insurance are still limited. Many informal workers in the Mekong Delta are lack of understanding of the policy. Besides, due to low and unstable monthly income, they are not willing to participate in social insurance. In addition, life insurance companies have wider distribution systems and better marketing strategies, which attracts more participants.<sup>79</sup>

In terms of agricultural insurance policies, the agricultural insurance policies have been fully promulgated, creating a legal framework for its implementation. Specifically, the Government promulgated Decree No. 58/2018/NĐ-CP dated on April 18, 2018 on agricultural insurance; the Prime Minister issued Decision No. 22/2019/QĐ-TTg dated on June 26, 2019 on implementing agricultural insurance policies for the period of 2019-2020; Ministry of Agriculture and Rural Development issued Circular No.09/2020/TT-BNNPTNT dated on July 24, 2020 guiding the certification of natural disasters and epidemics in the implementation of agricultural insurance support policy. In addition, basic agricultural production processes, standards and regulations have been promulgated and implemented in accordance with the Law on Cultivation, the Law on Animal Husbandry, the Law on Fisheries and the guiding documents. Provinces and centrally-run cities have organized the implementation of agricultural insurance policies. 80

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<sup>79</sup> ILSSA, and GIZ. 2020. "Assessment of impacts of Covid-19 pandemic on informal workers in Vietnam."

<sup>80</sup> Ministry of Agriculture and Rural Development. 2020. "Report on survey results in localities on implementing agricultural insurance in 2020."



In addition, voluntary commercial agricultural insurance (not financially supported by the State) has been implemented.<sup>81</sup> During three years from 2018 to 2020, the Agriculture Bank Insurance Joint-Stock Corporation (ABIC) launched the commercial agricultural insurance products in 17 provinces and cities. In particular, livestock insurance (dairy cows, beef cattle, breeding cattle) was participated by 182 households, 20 organizations with 18,192 cows, the insurance premiums were VND2,653.62 million, and the insurance revenue was VND516,352.22 million. Crop insurance (mostly for rubber and acacia trees) was implemented for 5,706.73 ha of 10 households and 13 organization participants. The insurance value was VND 253,934.31 million and the insurance revenue was VND998.54 million.

*Limitations and gaps in agricultural insurance policies and the implementation of agricultural insurance policies are as follows.*

*First*, the provisions of Decree No.58/2018/NĐ-CP still have some shortcomings; for example, procedures for considering and approving premium beneficiaries are complicated and take a long time (from commune, district to DOLISAs levels to submit to PPCs for approval). Decision No. 22/2019/QĐ-TTg has some points that do not attract producers: the implementation time from 2018 to 2020 was short, the Ministry of Finance approved the insurance products late (June 2020), lack of resources for local implementation, especially for the propaganda, introduction and inspection work; low premium support: the current support level (90% for poor households, 20% for near-poor households, common households and 20% for organizations) was lower than that in the pilot period (100% for poor households 80% for near-poor households, 60% for common households and 20% for organizations); not many kinds of insurance products (5 products for rice, black tiger shrimp, whiteleg shrimp, buffalo, and cow); limited types of risks to be covered: the biggest risk for fisheries is epidemics which are not covered by insurance,

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<sup>81</sup> Ministry of Agriculture and Rural Development. 2020. "Report on survey results in localities on implementing agricultural insurance in 2020."

buffaloes and cows are just insured for two types of diseases that have been vaccinated.<sup>82</sup>

*Secondly*, in terms of actual implementation, people and organizations of agricultural production have not fully complied with production processes according to regulations, standards and technical processes in agricultural production; the assessment of compensation for damage between enterprises and specialized agencies at local level is not consistent, leading to disputes and difficulties in compensation; premium rates and deductibles for agricultural insurance (Especially buffalo and cow insurance) are relatively high compared to other types of insurance; Crops and livestock are not considered eligible properties for loan security, so animal husbandry households still have to mortgage with the land use right certificate. This makes it difficult for farmers to participate in insurance, especially in case of natural disasters and saltwater intrusion.<sup>83</sup>

*Third*, insurance products are not attractive. Insurance products of a company are the factor that decides participation of producers. However, the insurance products applying premium support to rice, cattle and shrimp are not diverse, the terms and conditions are not attractive to farmers: the insurance premiums are high; as for rice crop insurance, there is no insurance for each household or village but just the average rice yield by commune; high deductibles (30-40% of the insured value); the process and procedures for determining damage and compensation are still complicated and not transparent, i.e. applying remote sensing technology to determine rice yield rather than depending on actual yield, so rice producers, especially poor and near-poor households find it difficult to access and it easily causes disputes. In addition, poor farmers produce in a small scale (in terms of area

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<sup>82</sup> Ministry of Agriculture and Rural Development. 2020. "Report on survey results in localities on implementing agricultural insurance in 2020."

<sup>83</sup> Ministry of Agriculture and Rural Development. 2020. "Report on survey results in localities on implementing agricultural insurance in 2020."

and number of animals, etc.), so the participation value is low, which cannot ensure the principle that the majority compensates for the minority in insurance.<sup>84</sup>

### **5.3. Basic social service policies**

#### ***Minimum education:***

Policies for minimum education in Vietnam are numerous and their coverage is quite wide. In addition to general policies, for specific target groups, especially those related to the research (in regions affected by saltwater intrusion and drought), the following policies may be included:

- Regarding tuition fee exemption and reduction, there are policies in the legal documents as followed:
  - + Decree No. 145/2018/NĐ-CP dated on October 16, 2018
  - + Decree No. 57/2017/NĐ-CP dated on May 9, 2017
  - + Decision No. 66/2013/QĐ-TTg dated on November 11, 2013
  - + Decree No. 74/2013/NĐ-CP dated on July 15, 2013
  - + Decree No. 49/2010/NĐ-CP dated on May 14, 2010
  - + Decree No. 86/2015/NĐ-CP dated on October 2, 2015

Subjects eligible for tuition fee exemption and reduction are preschool children, pupils and students, graduate students, postgraduate students who are studying at educational institutions of the national education system in accordance with the Law on Education, the Law on Higher Education, and the Law on Vocational Education.

- Regarding the policy implementation, in the Mekong Delta, basically in the provinces, there are preschools, of which 93% are public preschools, covering

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<sup>84</sup> Ministry of Agriculture and Rural Development, 2020. Report on survey results in localities on implementing agricultural insurance in 2020.

children aged up to five years.<sup>85</sup> However, most preschools only provide half-day classes, which causes difficulties for parents. Most classrooms in preschool education institutions in the Mekong Delta are semi-permanent (accounting for 44%), including classrooms for five-year-old children (49%). However, there are also borrowed classrooms. The rate of borrowed classrooms for five-year-old children is 22.3%.<sup>86</sup> The number of standard clean water and sanitation work for preschools is very small. In some places, preschool classes have to be combined with primary classes. For example, in Tien Giang province, 39 communes do not have preschools. The network of preschools is mostly distributed in urban area, towns, etc. and has not reached villages and hamlets yet, which does not facilitate parents in bringing children to school. The system of semi-boarding preschools is just launched in cities, townships, etc. Thus, the number of children going to school is limited.<sup>87</sup>

*Limitations and gaps in minimum education policies and the implementation of minimum education policies are as follows.*

*First*, access to minimum education policies of learners in remote areas, ethnic minority areas, the mountainous areas, islands, and part of regions affected by saltwater intrusion is limited due to natural conditions and regional customs. "Solutions" are needed to remove the "problems".<sup>88</sup>

*Second*, in the Mekong Delta, infrastructure to develop preschool education institutions is limited, especially in remote areas. Facilities and equipment for preschools are insufficient and fail to meet the requirement that 100% children to go to school at the right age.<sup>89</sup>

*Third*, teachers, especially preschool teachers are insufficient in terms of quantity and quality. However, there are no adequate mechanisms and specific policies to

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<sup>85</sup> Tran Thi Ngoc Tram. 2011. "The current situation and solutions to universalize preschool education for children aged 5 in the Mekong Delta." *Education Journal* 264(2):18-21.

<sup>86</sup> Tran Thi Ngoc Tram. 2011. "The current situation and solutions to universalize preschool education for children aged 5 in the Mekong Delta." *Education Journal* 264(2):18-21.

<sup>87</sup> Tran Thi Ngoc Tram. 2011. "The current situation and solutions to universalize preschool education for children aged 5 in the Mekong Delta." *Education Journal* 264(2):18-21.

<sup>88</sup> General Department of Population. 2018. "Access to basic social services for ethnic minorities: Current situation and policy implications."

<sup>89</sup> Tran Thi Ngoc Tram. 2011. "The current situation and solutions to universalize preschool education for children aged 5 in the Mekong Delta." *Education Journal* 264(2):18-21.

attract preschool teachers in regions affected by climate change and saltwater intrusion.<sup>90</sup>

### ***Rural clean water***

In the context of saltwater intrusion, domestic water in the Mekong Delta is one of the urgent problems. With an orientation of ensuring social security for people, including people in rural area, the Party and the State, and Governmental agencies have promulgated many mechanisms and policies on rural clean water, specifically, Decree No. 117/2007/NĐ-CP dated on July 11, 2007 of the Government on production, clean water supply and use; Decision No. 131/2009/QĐ-TTg dated on November 2, 2009 of the Prime Minister on a number of preferential policies for encouraging investment and management, and exploitation of rural clean water supply works; Decree No. 57/2018/NĐ-CP dated on April 17, 2018 of the Government on mechanisms and policies to encourage enterprises to invest in agriculture and rural area; Joint Circular No. 37/TTLT-BNN-BTC-BKHĐT dated on October 31, 2013 guiding the implementation of Decision No. 131/2009/QĐ-TTg on a number of preferential policies for encouraging investment and management, and exploitation of rural clean water supply works; Circular No. 54/2013/TT-BTC dated on May 4, 2013 of the Ministry of Finance on management, use and exploitation of concentrated rural clean water works. The Prime Minister approved the National Strategy for Rural Clean Water and Sanitation till 2020 (Decision No. 104/2000/QĐ-TTg dated on August 25, 2000). The objective of the Strategy was that by 2020, all rural residents used national standard clean water with the minimum amount of 60 liters/person/day, used hygienic latrines and practiced good personal hygiene, and kept the commune and village's environment clean. Ministry of Agriculture and Rural Development was the implementing agency. The main tool to implement the Strategy is the National Target Program for Rural Clean Water and Sanitation in three periods: 1998-2005; 2006-2010 and 2011-2015.

Since 2016, the content of rural clean water and sanitation has been integrated as one content of the National Target Program for New Rural Area Construction (NTP-

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<sup>90</sup> Tran Thi Ngoc Tram. 2011. "The current situation and solutions to universalize preschool education for children aged 5 in the Mekong Delta." *Education Journal* 264(2):18-21.

NRAC) for the period of 2016 - 2020<sup>91</sup>. In particular, the objective was that by 2020 “basically completing essential works to meet the requirements of production development and life of rural residents: transportation, electricity, running water, schools, and commune health stations.” The rural clean water policy in NTP-NRAC was specifically stipulated in the ninth content, which is: completing works to ensure domestic water supply for people. By 2020, 95% of the rural population would have access to hygienic domestic water, in particular 60% of the people would use clean water meeting standards of the Ministry of Health; 100% of schools (main branches) and commune health stations would have water supply facilities and hygienic latrines. In 2017, Vietnam committed to implement the sustainable development goal that “all citizens can use clean water meeting Vietnamese standards by 2030”. Resolution No. 20- NQ/TW dated on October 25, 2017 on strengthening the protection, care and improvement of people’s health in the new situation, sets out one of the tasks and solutions to focus resources on building, upgrading the system of water supply and drainage, and environmental sanitation. The Prime Minister approved the “National Action Plan for the Implementation of the 2030 Agenda for Sustainable Development” (Decision No. 622/QĐ-TTg dated on May 10, 2017), which defined that: by 2030, ensuring adequate and equitable access to safe, affordable drinking and domestic water for all.

Up to October 31, 2017, the percentage of rural population using hygienic water was 88.2%; the percentage of rural population using clean water meeting standards of the Ministry of Health<sup>92</sup> was 49.8%.<sup>93</sup> The program also focused on poor people in remote and distant areas. Up to that time, the percentage of poor people using hygienic water was more than 70%, the percentage of poor households using hygienic latrines was nearly 40%. Also up to that time, the program had helped build 3,329 clean water works, supported 2,304,965 rural households to build clean water works and 2,299,115 households to build hygienic latrines. The rural clean water supply network, especially in remote areas, and areas with difficult socio-economic

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<sup>91</sup> Prime Minister. 2016. "Decision on approving the National Target Program for New Rural Construction for the period of 2016-2020." *Thu Vien Phap Luat* (<https://thuvienphapluat.vn/van-ban/van-hoa-xa-hoi/Quyết-dinh-1600-QĐ-TTg-chuong-trinh-muc-tieu-quoc-gia-xay-dung-nong-thon-moi-2016-2020-320132.aspx>). Visited in April 2019.

<sup>92</sup> *Vietnamese Standard 02-MOH*

<sup>93</sup> Ministry of Agriculture and Rural Development. 2021. "Draft project of rural clean water supply for the period of 2021-2025."

conditions, had contributed to increasing the percentage of rural population accessing to clean water for daily life from 80.5% in 2012 to 88% in 2018, which was expected to reach 90% in 2020. The percentage of rural population using clean water according to the national standards increased from 38.7% in 2012 to 52% in 2018, and was expected to reach 51% by the end of 2020 (equivalent to 33 million people).<sup>94</sup>

*Limitations and gaps in clean water policies and the implementation of clean water policies in the context of saltwater intrusion in particular and climate change in general are as follows.*

*First*, the Mekong Delta now has 13 million people living in rural area. For the past years, with the investment of the State from central to local levels, effective support of international organizations and especially the active participation of people, 98% of the people have used hygienic water, 55% of the people have used clean water meeting the national standards, including about 8 million people (61%) using water from concentrated water supply works (3,853 works); 5 million people (39%) using water on a household scale (dug wells, drilled wells, jars, tanks, water storage devices, etc.).<sup>95</sup> However, unusual and extreme weather, water sources, saltwater intrusion on a large scale in the Mekong Delta have affected the rural domestic water supply; most of the concentrated water supply works have had their capacity reduced, even some works have stopped working, making many households lack of domestic water. About 167 water supply works have been affected by saltwater intrusion, so their capacity has been reduced and the water has become saline; the works in operation have many potential unsustainable factors due to the impact of natural disasters and climate change, especially the works managed by the People Committees of communes, cooperatives and the communities, the works in the regions regularly affected by natural disasters, saltwater intrusion and drought, flood, storms, etc. and water pollution.<sup>96</sup> Due to the impact of saltwater intrusion, many people have to cope with difficulties due to domestic water shortage as

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<sup>94</sup> Ministry of Agriculture and Rural Development. 2021. "Draft project of rural clean water supply for the period of 2021-2025."

<sup>95</sup> Ministry of Agriculture and Rural Development. 2020. "Conference "Current situation and overall solutions for rural water supply for provinces in the Mekong Delta ".

<sup>96</sup> Ministry of Agriculture and Rural Development. 2021. " Draft project of rural clean water supply for the period of 2021-2025."

mentioned above. Meanwhile, policies on clean water have not had specific regulations on supporting clean water for households affected by saltwater intrusion and drought.

*Second*, currently, rural water supply and sanitation still have challenges and problems. Specifically, more than 31 million rural people have not yet used water meeting Vietnamese standards, more than 5 million high school students have not been able to use clean water facilities and toilets in schools; especially in the mountainous and remote areas, the areas with ethnic minority groups, and the areas with water scarcity, it's hard to have clean water and sanitation; the percentage of people using standard clean water is much lower than the average rate of the country.<sup>97</sup> The specific objectives by 2020 that have not been achieved are: by the end of 2019, 88.5% of rural people would use hygienic water, including nearly 51% of the rural people would use clean water meeting the national standard of 02:2009/BYY. Meanwhile, the strategic objective by 2020 was that all rural people (100%) would use clean water meeting the national standards with the minimum amount of 60 liters/person/day.<sup>98</sup> In addition, that 56% of rural people used clean water on a household scale indicates possible unsafe water due to the shortage of attention, technical assistance, and quality control at household.<sup>99</sup> This implies numerous difficulties in accessing domestic water of people, especially vulnerable groups in the context of climate change in general and saltwater intrusion in particular. In the coming years, it is forecast that the number of people in shortage of clean water will be on the rise and they will find it harder to access clean water sources from production and daily life. It requires timely solutions and policies.<sup>100</sup> This is a shortcoming of the implementation of clean water policies in the context of climate change in general and saltwater intrusion in particular.

### ***Health care***

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<sup>97</sup> Ministry of Agriculture and Rural Development. 2021. "Draft project of rural clean water supply for the period of 2021-2025."

<sup>98</sup> General Department of Irrigation. 2020. "National Strategy on Rural Clean Water Supply and Sanitation to 2030 with a vision to 2045."

<sup>99</sup> Ministry of Agriculture and Rural Development. 2021. "Draft project of rural clean water supply for the period of 2021-2025."

<sup>100</sup> General Department of Irrigation. 2020. "National Strategy on Rural Clean Water Supply and Sanitation to 2030 with a vision to 2045."



Health care is a national strategy towards a country with healthy population. Basically, Vietnam's health care is provided through health insurance with relatively large coverage, i.e. 98% of the population; and it targets universal health insurance.<sup>101</sup> In addition to compulsory health insurance, there is voluntary health insurance which is launched via the voluntary health insurance participation regime or supported by the State. Health insurance beneficiaries and benefits are stipulated in the following legal documents: Law on Health Insurance 2008; Law on Health Insurance 2014; Decree No. 146/2018/NĐ-CP dated on October 17, 2018. The beneficiaries of health insurance support are children, poor people, ethnic minority groups, the elderly people, and other social insurance groups. The subjects and levels of support are specified in the following documents: Decision No. 91/2000/QĐ-TTg dated on August 4, 2000; Law on Health Insurance 2008; Law on Health Insurance 2014; Decree No. 146/2018/NĐ-CP dated on October 17, 2018; Decree No. 67/2007/NĐ-CP dated on April 13, 2007; Decree No. 13/2010/NĐ-CP dated on February 27, 2010; Decree No. 136/2013/NĐ-CP dated on October 21, 2013. In addition to full health insurance support (100% premium), there is a policy on partial health insurance support for pupils, students, near-poor households, forestry, agricultural and fishery households with average or higher living standards, and people with serious diseases.

The grassroots health system and the preventive medicine system have helped improve opportunities for people to access and enjoy health services, especially in remote, isolated and ethnic minority areas. By the end of 2018, 98.4% of the communes had health stations; 96.0% of the villages and hamlets had health workers, 90% of the communes had doctors, 76% of the communes met the national criteria for commune health stations for the period of 2011 - 2020, more than 95% of the communes had obstetricians or midwives.<sup>102</sup> The network of reproductive health care service was consolidated and developed, covering 100% of districts,

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<sup>101</sup> MOLISA, and GIZ. 2020. "Report on review and assessment of the adaptability of the legal system in the context of the Covid-19 pandemic (in particular) and the situation of natural disasters and epidemics in general."

<sup>102</sup> Le Tan Dung. 2021. "Vietnam aims to build a sustainable social security system." The Communist Magazine ([https://www.tapchicongsan.org.vn/media-story/-/asset\\_publisher/V8hhp4dK31Gf/content/viet-nam-huong-den-xay-dung-mot-he-thong-an-sinh-xa-hoi-ben-vung](https://www.tapchicongsan.org.vn/media-story/-/asset_publisher/V8hhp4dK31Gf/content/viet-nam-huong-den-xay-dung-mot-he-thong-an-sinh-xa-hoi-ben-vung)). Visit on October 14, 2021.

93% of communes and 96% of villages.<sup>103</sup> Preventive medicine played a decisive role in preventing dangerous epidemics to avoid major epidemics. The model of collaboration between military and civilian health care was promoted and brought into full play. The rate of children under 1 year old who were fully immunized was very high, i.e. 96-98%; the rate of underweight children under 5 years old gradually decreased from 16.2% in 2012 to 12.7% in 2018 and was expected to reach 12% in 2020.<sup>104</sup> Besides the above policy, the mentioned target group, i.e. children aged 0-5, was also beneficiaries of the National Immunization Program for the entire population aged 0-5 of Vietnam.

*Limitations and gaps in health care policies and the implementation of health care policies in the context of saltwater intrusion in particular and climate change on general are as follows.*

In the Mekong Delta, according to a report of the Ministry of Health (2018), by 2018, nearly 80% of the population in the Mekong Delta participated in health insurance.<sup>105</sup> In specific, seven provinces completed the target of health insurance coverage including Ben Tre, Tra Vinh, Soc Trang, Bac Lieu, Long An, Kien Giang and Tien Giang. Thus, the other six provinces did not complete the program. Up to 4 million people in the Mekong Delta did not participate in health insurance.<sup>106</sup> In general, the rate of health insurance participants in the region was low. Given that fact, many people whose health was affected by saltwater intrusion in particular and climate change in general will have difficulties in accessing health care services. That is not to mention the disparity in health status and enjoyment of health care services

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<sup>103</sup> Le Tan Dung. 2021. "Vietnam aims to build a sustainable social security system." The Communist Magazine ([https://www.tapchiconsan.org.vn/media-story/-/asset\\_publisher/V8hhp4dK31Gf/content/viet-nam-huong-den-xay-dung-mot-he-thong-an-sinh-xa-hoi-ben-vung](https://www.tapchiconsan.org.vn/media-story/-/asset_publisher/V8hhp4dK31Gf/content/viet-nam-huong-den-xay-dung-mot-he-thong-an-sinh-xa-hoi-ben-vung)). Visit on October 14, 2021.

<sup>104</sup> Le Tan Dung. 2021. "Vietnam aims to build a sustainable social security system." The Communist Magazine ([https://www.tapchiconsan.org.vn/media-story/-/asset\\_publisher/V8hhp4dK31Gf/content/viet-nam-huong-den-xay-dung-mot-he-thong-an-sinh-xa-hoi-ben-vung](https://www.tapchiconsan.org.vn/media-story/-/asset_publisher/V8hhp4dK31Gf/content/viet-nam-huong-den-xay-dung-mot-he-thong-an-sinh-xa-hoi-ben-vung)). Visit on October 14, 2021.

<sup>105</sup> Ministry of Health. 2018. "Report on the implementation of health insurance."

<sup>106</sup> Vietnam Social Security. 2019. "Report on the implementation of social insurance, unemployment insurance, and health insurance policies."

of poor people and poor regions in general, and ethnic minority groups and regions affected by saltwater intrusion in particular.

#### ***6. Proposing amendments and improvements to social security policies in the context of climate change***

From the actual impact of saltwater intrusion in particular and climate change in general on production, employment, income, daily activities, and health of people in many provinces in the Mekong Delta, and limitations and gaps in the mentioned policies, we would propose some specific recommendations as followed.

*First*, it is necessary to review and amend legal provisions on employment in order to cover all employees with labor contracts, including those with contracts from full 1 month to less than 3 months, etc. and expand ranges of beneficiaries of loans from the National Employment Fund.

*Second*, the current policy only supports people with crop, livestock and fisheries damage to restore agricultural production but does not take into account the creation of jobs associated with production after damage. In order to contribute to the restoration and maintenance of cultivated area, to create local jobs for policy beneficiaries, to limit migration, and to reduce social consequences, it is necessary to supplement policies to support the research, selection and development of plant varieties, livestock and aquatic breeds with potential and advantages of the Mekong Delta, meeting market requirements and adapting to climate change in general and saltwater intrusion in particular (salt-tolerant rice varieties, brackish water shrimp, pangasius, etc.); directly support plant varieties and livestock breeds; provide guidance on cultivation and care techniques for rice cultivation, fruit tree planting and aquaculture households, especially vulnerable groups such as poor people, ethnic minority people, people with extremely difficult backgrounds.

*Third*, the reality shows that saltwater intrusion negatively affects production, employment, income of a significant part of people who live on rice cultivation, fruit tree planting, and aquaculture. The negative impacts are much harder on vulnerable groups such as poor people, ethnic minority people, and people with extremely difficult backgrounds. Meanwhile, the current policies have no regulations on vocational training to help workers affected by saltwater intrusion in particular and climate change in general to improve or change livelihoods. Thus, it is necessary to

formulate vocational training policies on rice cultivation, fruit tree planting and aquaculture for agricultural laborers affected saltwater intrusion in particular and climate change in general. The training should focus on poor people, ethnic minority people, people with extremely difficult backgrounds, and people who wish to migrate to improve their livelihoods due to inability to continue agricultural production in the context of saltwater intrusion. The vocational training should target two objectives. The first objective is to help them with knowledge and skills so that they can continue rice cultivation, fruit tree planting and aquaculture and adapt to saltwater intrusion in particular and climate change in general. The second objective is to help them with new knowledge and skills so that they can switch to another livelihood when the previous livelihoods are no longer effective due to the impacts of climate change.

*Fourth*, The Government should amend Article 24 (of Decree No. 58/2018/ND-CP) on agricultural insurance procedures to make the agricultural insurance support procedure more appropriate, i.e. removing unnecessary procedures and authorizing district-level to approve policy beneficiaries, expanding cultivated area, selecting plant varieties and livestock breeds with potential and advantages in mass production, selecting kinds of risks to be insured in line with actual situations and actual needs of producers. The government should encourage localities to allocate budgets to support people (especially vulnerable social groups due to the impacts of climate change in general, and the impact of saltwater intrusion in particular) to participate in agricultural insurance in line with local conditions. The government should encourage insurance businesses to develop insurance products that are suitable for farmers' needs, i.e. focusing on key crops and livestock, urgent risks in the regions (common natural disasters and epidemics that have big impacts on production such as saltwater intrusion). In particular, it is necessary to consider appropriate rates of insurance premiums, types of epidemics and natural disasters to be insured that attract farmers' attention. The process and procedure for settling insurance benefits should be clear and convenient for all parties, ensuring the harmony of interests of the parties to attract more households and production organizations to participate in agricultural insurance in the coming time, especially the households affected by climate change in general and saltwater intrusion in particular.

*Fifth*, in terms of education for people in the saltwater intrusion region, the reality shows that the Mekong Delta is a “low-lying area” in terms of education. In order for all students in the Mekong Delta, especially ethnic minority students and poor students in the saltwater intrusion region to have equal access to education, first and foremost, it is necessary to bring them to school. Thus, it is necessary to continue completing the network of schools and classes, especially preschools suitable for conditions of the region, creating favorable conditions for children and learners in the region to participate in learning. At the same time, renovating educational organization and activities of specialized schools (those for ethnic minority students, students with disabilities, etc.) in order to meet the specific learning needs of specific student groups. In addition, it is necessary to innovate educational content and methods to be suitable for learners, especially paying attention to preparing Vietnamese for ethnic minority students before Grade 1. Besides, provinces in the region should increase investment in facilities, infrastructure and learning equipment, especially for primary schools and preschools, eliminating the situation of pairing classes and schools in some localities.

*Sixth*, many people’s health is affected by saltwater intrusion in particular and climate change in general. Meanwhile, many of them do not have health insurance. In addition, disparities in health status and access to health care services of poor people and poor region in general and ethnic minority people and saltwater intrusion region in particular still exist. Thus, it is necessary to formulate policies to support people whose health is affected by saltwater intrusion in particular and climate change in general so that they can buy health insurance cards and use health insurance cards when they need medical care. Along with that, policies on public health care and propaganda about the impacts of climate change and saltwater intrusion on health as well as capacity building for local health forces need to be improved.

*Seventh*, the reality shows that saltwater intrusion is often paired with drought, which negatively affects daily life of a significant part of population in the Mekong Delta. One of the biggest consequences of the impacts is domestic water shortage on a large scale. The problem is even more of a concern among vulnerable groups such as poor people, ethnic minority people, and people with extremely difficult backgrounds, women and children. Meanwhile, the current policies do not have

specific regulations on supporting clean water for vulnerable groups to the impact of saltwater intrusion in particular and climate change in general. Thus, it is necessary to have policies to support domestic water for the vulnerable groups including poor people, ethnic minority people, and people with extremely difficult backgrounds when they are lack of clean water due to saltwater intrusion. In addition, it is necessary to give priority to financial and technical support, investment in construction, and supply of chemicals and equipment for safe water treatment and storage for households in difficult regions and, policy households, and vulnerable groups; safe water storage support for households in regions that do not have access to centralized water supply systems. Priorities for clean water in rural areas, especially in the saltwater intrusion region should be integrated into programs and projects with the same objective of rural clean water such as the National Target Program for New Rural Area Construction, the National Target Program for Socio-Economic Development in ethnic minority and mountainous area, programs and projects with preferential loans for rural clean water supply.

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