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## **IMPACTS OF CLIMATE CHANGE ON FEMALE LABORS' LIVELIHOODS IN THE COASTAL REGION OF VIETNAM'S NORTH-CENTRAL PROVINCES**

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### **ABSTRACT**

Although climate change is one of the most worrying challenges to the entire humanity, Vietnam is one of the most seriously affected countries. Of these, the most negatively impacted is naturally economic activities of the coastal areas, while the livelihoods of disadvantaged groups, especially women's life quality in difficult areas, are socially most influenced. Although Vietnam's North Central provinces possess a great number of potentials and advantages to successfully implement the marine economic strategy according to the model of green growth and sustainable development in the near future, most of the largest urban centers and the most developed economic areas of this region are located in the coastal areas. Simultaneously, the rise of sea level has made mangrove increased, global warming has left many farming areas fallowed, and unusual events of natural disasters have made desertification more widespread. In such a context, women's livelihoods in the coastal areas of Vietnam's North Central provinces often suffer the most negative impacts. Therefore, a system of solutions that are technical and technological as well as educational and strategic is extremely urgent for female labors' livelihoods in the coastal areas of Vietnam's North Central provinces in the coming time.

**Keywords:** Climate change, Female labor, Coastal region, Economic activity, North Central province

## **1. INTRODUCTION**

Climate change (CC) is currently one of the most worrying challenges of humanity. The world economy suffered reportedly a loss of \$ 2,250 billion in the period of 1998-2017. This figure could reach 7,900 billion USD by 2050 if no efficient response measures are taken into effect. Of these, Vietnam is seen as one of the countries most negatively affected by climate change [1]. The most affected by climate change are the coastal areas from natural perspectives. Economically, production, business, and fishing activities related to the sea are often affected more clearly. Meanwhile, disadvantaged social groups such as single women, homeless children, and lonely elderly are socially the most vulnerable and adversely affected by climate change. In this respect, Vietnam's North Central provinces have not necessarily suffered the most damages from climate change in general. However, because the area of coastal plain of this region is not too big, most of the busiest economic and urban centers are located along the coast, and socio-economic conditions are still difficult, the livelihoods of female workers have also been significantly affected by unusual developments of climate change in recent years. Climate change is making negative impacts on female workers' sustainable poverty reduction in the North Central region [2]. What is the potential for marine economic development in Vietnam's North Central provinces, what are the impacts of climate change on female workers' livelihoods in the North Central Coastal region, and what solutions are needed to minimize the avoidable consequences of climate change on female workers' livelihoods in this region? These questions have been answered by authorities and researchers in many different ways and levels, but no one can completely solve all of the aforementioned issues. It is therefore based on the results of analyzing many different sources by qualitative and quantitative methods as well as the interdisciplinary and specialized approaches, the paper does not only prove the abundant potentials in the marine economic development of the North Central provinces, but also outlines the undesirable impacts of climate change on female workers' livelihoods of this region and offers some recommendations to overcome the aforementioned situation as soon as possible.

## **2. IMPACTS OF CLIMATE CHANGE ON THE LIVELIHOODS OF FEMALE WORKERS IN THE COASTAL AREAS OF VIETNAM'S NORTH CENTRAL PROVINCES**

## 2.1. Marine economic prospects of Vietnam's North Central provinces

The total natural area of Vietnam's North Central region ranges from around 51,507 [3, p. 9] to about 51,555.6 km<sup>2</sup> [4]. Of these, the natural area of the coastal plain is only 6,200 km<sup>2</sup>, equivalent to approximately 12% of the area of the whole region and 9.5% of the country's coastal area [5]. With a coastline of around 632,04km [6], all of six North Central provinces are bordered by the East Sea [7], possess an ideal seaport system for marine economic development [8], and obtain a particularly important position in the national strategy of marine economic development [4].

The North Central region's most typical seaports are Nghi Sơn, Sơn Dương, Vũng Áng [9], Cửa Lò, Cửa Việt, Chân Mây [3, p. 10], Nhật Lệ..... [10, p. 75]. Of the 14 groups of the region's deep-water seaports, 8 of them are regional transport hubs and national general seaports. The North Central region's estuary system is an important international exchange hub and one of the main cargo transport routes of the country [6].

Vietnam's North Central region is the location of many beautiful beaches and is very advantageous to the development of marine tourism [11]. The most typical ones of these are Sầm Sơn, Cửa Lò, Thạch Hải, Nhật Lệ, Cửa Tùng, Thuận An [4]. In support to these beaches is a system of coastal landscapes such as Đá Nhảy beach, Lý Hòa beach, Nhật Lệ estuary, Đảo Yến-Vũng Chùa [10, p. 75]. At the same time, Vietnam's North Central region also has many favorable conditions to develop coastal industrialized agriculture thanks to a system of fertile soil and dense rivers [8].

Nevertheless, fishing and aquaculture are particular advantageous fields of agricultural production of the North Central region. Vietnam's North Central sea area is not only a frequent destination of many species of valuable seafood, but 163,900 hectares of water surface area are also used for aquaculture in addition to 1,947 untapped lakes [11].

In summary, Vietnam's North Central region possesses a lot of marine economic potentials [11]. Aside from a long coastline [4], the dense seaport system is also an important basis for the socio-economic development planning of the North Central region. The prioritized focuses in this plan are the economic sectors related to the sea such as marine tourism, shipping, and coastal urban areas [11]. Nevertheless, one of the riskiest and most vulnerable regions to climate change in Vietnam is the North Central provinces [1].

## 2.2. Challenges of climate change to the coastal female workers' livelihoods in Vietnam's North Central provinces

Climate change often causes negative impacts on livelihoods, job opportunities, and quality of life for many female workers. This issue of Vietnam's North Central region is often identified in three main aspects:

**Effects of global warming:** global warming is a direct consequence of climate change and has caused considerable harm to coastal economic activities. The North Central region is one of Vietnam's two areas that have witnessed the most frequent maximum temperature rise over the past few years [12, pp. 42-55]. On April 20, 2019, Hương Khê meteorological station (Hà Tĩnh) observed the highest temperature value in Vietnam so far up to 43.40°C [1]. Vietnam's average temperature has increased sharply over the past few years [1], but the number of hot days above 35°C has increased most in the North Central region [13, p. 10]. The capacity of reservoirs in Vietnam's Central region is currently less than 50%. Out of a total number of 520 reservoirs that are drying up in Vietnam's Central region, 286 lakes are located in the North Central region. Around 14,279 hectare of crops in the North Central region have been suffering from drought and shortage of water, while approximately 8,800 households in the region have been in lack of water for domestic use [14]. The North Central region may experience more severe droughts in the coming years due to rising temperatures and decreasing rainfall during the dry season [13, pp. 10, 29]. These phenomena have significantly affected coastal people's quality of life, but female workers' livelihoods are often in more alarming situation. About 62.4% of Vietnamese women are doing unpaid housework and around 41.1% of women are doing simple jobs. Although vocational training and job creation for female workers in rural Vietnam have been improved significantly, female workers' livelihoods in the North Central region are still facing several difficulties in general. A number of women in the North Central Coast have not had full access to personal development opportunities. Approximately 26.56% of Vietnamese women are still unable to read and write professionally, while only around 7.2% of female workers have received technical and professional training and about 26% of women are owners of private lands and family properties [15]. Many women are the main labor force in agricultural production activities in coastal areas. In that general picture, although the livelihoods of female workers in ethnic minorities are often most seriously threatened, female workers in the North Central coastal region are not immune from the general impacts of climate change. The percentage of poor households owned by female workers has remained relatively high in rural areas [16].

**Impacts of sea level rise:** The most visible effects of climate change on the North Central coastal region have been storms and tropical depressions, but floods, landslides, and land degradation have also taken place more strongly in addition to the increasing salinity intrusion. If the sea level rises by 1 meter, some coastal plains in the North Central region will be submerged, especially in Thanh Hóa [17]. It is worrisome that the sea level in Vietnam is predicted to rise faster than the world average. By 2050, Vietnam's coastal water level may increase 22 cm more and by 2100 would be 53 cm. The area from Móng Cái to Đèo Ngang would witness the lowest sea level rise of 55 cm. If the sea level rises 100 cm, around 1.5% of the area of coastal provinces from Thanh Hóa to Bình Thuận [13, p. 29], about 7.14% of agricultural land, 28.67% of land area, approximately 9% of national highway system, 12% of provincial road system, and 4% of railway system is frequently flooded. In addition to the negative impacts on tourism, trade, energy, and many other economic activities related to the sea, if the sea level rises by 1 meter, most of the country's coastal industrial zones will be submerged. The lowest level will be over 10% of the area and the highest will be around 67% of the area of industrial zones [17]. Meanwhile, the North Central region is currently home to 11 out of 17 coastal economic zones of the whole country. The most typical of these are Chân Mây economic-commercial zone (Thừa Thiên-Huế) and Vũng Áng economic zone (Hà Tĩnh) [6]. However, the salinity intrusion in many coastal areas of the North Central provinces has recently been very alarming. Simultaneously, climate change has also made the output of fishing, especially subtropical seafood of the North Central region, decrease enormously in recent years. While the increase in landslides in coastal areas has led to the migration of many families in the region, natural disasters have increased the proportion of poor coastal households [2]. That fact has made female workers' livelihoods in the North Central region more difficult. Female workers are therefore one of the most vulnerable groups to the impacts of climate change. Apart from health issues, the North Central female workers' household economy and ability to settle down depend decisively on coastal economic activities [17].

**Influences of unusual and complicated events of natural disasters:** storms and floods are one of the specialties of the Central region and Vietnam is one of the countries most affected by climate change [17]. Monsoons and some extreme phenomena have increased rapidly in recent years. The number of strong storms has come very quickly and tended to increase. The starting time of the summer monsoon usually has appeared earlier, but ended later, while monsoon rains have tended to increase and the number of storms and strong tropical

depressions has appeared more frequently [13, pp. 10, 29]. The year of 2017 welcomed 16 unexpected storms which caused a loss of around 2.7 billion USD [17]. The North Central region is annually the focal point for approximately 9-11 storms and tropical depressions from the East Sea [18]. In 2020 alone, 13 storms landed in Vietnam [19]. It is forecasted that the national rainfall will increase about 5-15%, but it may grow by more than 20% in the North Central region in the middle of the twenty-first century [13, p. 28]. The livelihoods of small fishing communities will be most affected. Around 58% of coastal residents' livelihoods in Vietnam are mainly based on agriculture and fishing. The majority of them is poor and has very few livelihood options. In addition to aquaculture, they are usually only able to exploit seafood, but all coastal economic activities have been suffering negative impacts of climate change. The most serious damage of these is the livelihoods of female workers in Vietnam's Central provinces. One of the most important goals of the Women Union of the North Central Emulation Cluster in 2018 was therefore to focus on overcoming the consequences of natural disasters and annual floods [16].

In brief, climate change has caused many long-term impacts on the economies of the North Central region. Of these, the most negatively affected are coastal economic activities. However, the livelihood of female workers in marine-related activities is a matter of concern. While global warming has turned some of the lush fields of the North Central region into wasteland, the livelihoods of many families in which female workers play a key role have also been substantially affected. At the same time, sea level rise has made many rich coastal areas of the North Central region severely contaminated with alum and become seriously salty. Fishing and aquaculture activities in the region have therefore also been considerably reduced. Although female workers have not always been the main force in offshore fishing activities, many coastal economic activities have often witnessed the active role of women. However, the recently unusual developments of climate change have not only deprived the livelihoods of many female workers, but also made their career opportunities in coastal areas more challenging. This fact has proven that although climate change is a global challenge, the livelihoods of female workers in the North Central region are also subject to many unpredictable negative impacts.

### 2.3. Problems and solutions

Based on the aforementioned analyses, the study gives some suggestions and solutions to the impacts of climate change on female labors' livelihoods in the North Central region as follows:

*Firstly*, women accounted for 50.2% of Vietnam's population in 2019 (48,327,923/96,208,984 people) [20, p. 45]. Female employees accounted for 45% of Vietnam's working age population in the first quarter of 2020 (22 out of 48.9 million people). Women's labor force participation rate is 69.79% and men's is 81.19% [21, p. 2]. The total female population of the North Central provinces was 5,462,322 people (50.05% of the whole region's population). The ratio of men to women for the entire North Central region was 99.43% in 2019. This fact shows that women have played a very important role in Vietnam's workforce and the North Central provinces' economy, but most of these focused on coastal agricultural production activities. Female workers are the social group most severely affected by climate change in terms of both size and extent. This target group should therefore be paid more attentions in the strategy of building the region according to the model of green growth and sustainable development in the coming decades.

*Secondly*, up to 3.7% of Vietnamese people aged over 4 was disabled in 2019, but this rate was higher for women than for men. In which, up to 4.5% of the population in the North Central and Central Coastal region suffered disability. The disability rate of the North Central region was the highest in the country [22]. The livelihoods of many normal female workers are already subject to many negative impacts of climate change, but those of disabled female workers are even more worrying. It is therefore in addition to the goals of sustainable poverty reduction, Vietnam's North Central provinces should give more priorities to job creation for those who have been most often affected by climate change, especially disabled women [2].

*Thirdly*, although female workers account for a significant proportion in coastal economic activities, their educational and professional qualifications are generally lower than what is actually required. A section of female workers in remote and isolated areas still have the thought of waiting and relying on the state's supportive policies [16]. Only 32.5% of the country's female workers have graduated from high school and 3.3% was still unable to use the national writing system at the beginning of the twentieth first century. Although the illiteracy rate in the rural North Central region was 13%, only around 7.8% of female rural workers received vocational training. This fact shows that female workers have been facing numerous disadvantages in the labor market [23]. It is therefore very necessary to raise awareness of women in the North Central region of the negative impacts of climate change on their livelihoods in the new context [17]. However, a specific legal corridor and favorable mechanism for the North Central female workers to participate in the labor market more actively and actively is an urgent task.

*Additionally*, although the labor force participation rate of Vietnamese women (72%) was higher than the world average (49%) in 2017, female workers have been subject to more unfair treatments. Female workers contributed up to 66.6% of the family workforce and 52.1% of the unskilled workforce, but women accounted for only 26.1% of leadership positions. While 59.6% of vulnerable jobs in the informal sector belonged to female workers, this figure for men was only 31.8%. Vietnamese female workers' job opportunities have generally been still inadequate, but the North Central female workers' livelihoods are even more concerned [24]. The Women Unions in the North Central provinces, therefore, need to further promote their supervisory function and social critical role to create favorable conditions for coastal women to have a more favorable livelihood condition [16].

*Finally*, female workers have often had to work in less favorable conditions than male labors. Around 7.8 million Vietnamese female workers have been working in unsecured conditions in the informal sector. While about 73.91% of male workers were protected by indefinite term labor contracts in the foreign invested enterprise sector, this figure for women was only 67.67% in 2017. Income of Vietnamese female workers was accordingly usually 10.7% lower than that of male ones in 2016 [24]. It is in practice also the livelihood situation of many North Central coastal women, but the issue has been increasingly serious under the impacts of climate change. The change of the operating model of women's organizations and the construction of legal tools to protect the legitimate rights of the North Central coastal female workers therefore become more urgent than ever [16].

### **3. CONCLUSION**

In conclusion, although the coastal plain area accounts for only around 12% (approximately 6,200 km<sup>2</sup>) [5] of the total natural area of the North Central region (51,507 km<sup>2</sup>) [3, p. 9], this is the location of the urban centers and the most economically developed zones of the whole region [6]. For this reason, even though the North Central provinces have not necessarily been the region most negatively affected by climate change over the past few years, because the coastal area plays a key role in the development strategy according to the model of green growth and sustainability of the whole region, the damage caused by climate change is predicted not to be simple. One of the most negative impacted of these is the livelihoods of coastal female workers. The unusual developments of climate change have made many North Central female workers' livelihoods more unstable. Of the most concerned is that these



effects are occurring at a faster speed and with greater intensity than what could be predicted [17]. A system of synchronous and reasonable solutions to minimize the unexpected impacts of climate change on female workers' livelihoods in this area is hence an urgent requirement. The most prominent of these is to know how to promote the role and effectively use the strengths of coastal female labors in economic development to increase the whole region's opportunities for prosperity and transform this area's strategies for sustainable development to quickly become a reality.

## REFERENCES

- [1]. Trần Hồng Thái (2020, June 20). Đánh giá tác động của cực đoan khí hậu dưới ảnh hưởng biến đổi khí hậu với phát triển bền vững. [Online]. Available at: <http://hdl.vn/vi/nghien-cuu---trao-doi/danh-gia-tac-dong-cua-cuc-doan-khi-hau-duoi-anh-huong-bien-doi-khi-hau-voi-phat-trien-ben-vung.html> [Accessed on August 1, 2020].
- [2]. Bùi Thị Phương Thùy (2010, April 15). Đánh giá tác động của BĐKH đến việc thực hiện MTQG giảm nghèo bền vững ở Việt Nam hiện nay. [Online]. Available at: <https://baovemoitruong.org.vn/danh-gia-tac-dong-cua-bdkh-den-viec-thuc-hien-mtqg-giam-ngheo-ben-vung-o-viet-nam-hien-nay/> [Accessed on August 1, 2020].
- [3]. Bắc Trung Bộ - Vùng đất và con người (2010). Nhà xuất bản Quân đội nhân dân. Hà Nội.
- [4]. Phạm Phương (2015). Bắc Trung Bộ. [Online]. Available at: <http://vietnam-tourism.com/index.php/tourism/items/2878> [Accessed on June 8, 2020].
- [5]. Trung Bộ vài nét tổng quan (2017, April 3). [Online]. Available at: <https://dantocmiennui.vn/trung-bo-vai-net-tong-quan/130805.html> [Accessed on June 8, 2020].
- [6]. Nam Bắc (2019, October 18). Phát triển kinh tế vùng Bắc Trung Bộ: Liên kết trong tổng thể. [Online]. Available at: <http://kinhthedothe.vn/phat-trien-kinh-te-vung-bac-trung-bo-lien-ket-trong-tong-the-355379.html> [Accessed on June 8, 2020].
- [7]. Nguyễn Xuân Đường (2015, May 31). Liên kết vùng Bắc Trung bộ nâng sức cạnh tranh của tỉnh Nghệ An. [Online]. Available at: <http://vinhcity.gov.vn/diaphuong/?detail=36263&id=2&lien-ket-vung-bac-trung-bo-nang-suc-can-phanh-cua-tinh-nghe-an> [Accessed on June 8, 2020].

- [8]. Nguyễn Hoài (2018, October 6). Phát triển nông nghiệp công nghiệp hóa vùng Bắc Trung Bộ. [Online]. Available at: <https://www.nhandan.com.vn/kinhte/item/37832002-phat-trien-nong-nghiep-cong-nghiep-hoa-vung-bac-trung-bo.html> [Accessed on June 8, 2020].
- [9]. Bộ Giao thông vận tải (2011). Quyết định phê duyệt quy hoạch chi tiết nhóm cảng biển Bắc Trung Bộ (Nhóm 2) giai đoạn đến năm 2020, định hướng đến năm 2030. Số: 1742/QĐ-BGTVT. ngày 3 tháng 8 năm 2011. Hà Nội.
- [10]. Trần Thanh Tùng (2019). Phát triển kinh tế biển của tỉnh Quảng Bình trong liên kết vùng Bắc Trung Bộ. Luận án tiến sĩ, Chuyên ngành: Kinh tế chính trị. Mã số: 62 31 01 02. Học viện Chính trị Quốc gia Hồ Chí Minh. Hà Nội.
- [11]. Ngọc Anh (2019, November 6). Khai phá thế mạnh kinh tế vùng Bắc Trung bộ. [Online]. Available at: <http://thuysanvietnam.com.vn/khai-pha-the-manh-kinh-te-vung-bac-trung-bo-article-22880.tsvn> [Accessed on June 8, 2020].
- [12]. Phan Văn Tân và Ngô Đức Thành (2013). Climate Change in Vietnam: Some Research Findings, Challenges and Opportunities in International Integration. VNU Journal of Science, Earth and Environmental Sciences, Vol. 29, Nr. 2, pp. 42-55.
- [13]. Bộ Tài nguyên và Môi trường (2016). Tóm tắt kịch bản Biến đổi khí hậu và nước biển dâng cho Việt Nam. Hà Nội.
- [14]. Bích Nguyên (2020, July 8). 520 hồ chứa nhỏ tại khu vực Trung bộ và Tây Nguyên đang cạn nước. [Online]. Available at: <https://www.bienphong.com.vn/520-ho-chua-nho-tai-khu-vuc-trung-bo-va-tay-nguyen-dang-can-nuoc-post430620.html> [Accessed on August 1, 2020].
- [15]. Hồng Phúc (2019, December 19). Phụ nữ chưa tiếp cận đầy đủ với các cơ hội phát triển. [Online]. Available at: <https://baodantoc.vn/phu-nu-chua-tiep-can-day-du-voi-cac-co-hoi-phat-trien-1576609721243.htm> [Accessed on August 1, 2020].
- [16]. Thanh Thúy (2017, December 18). Hội Liên hiệp phụ nữ cụm thi đua Bắc Trung bộ Tổng kết công tác thi đua năm 2017. [Online]. Available at: <https://tinhuyluongtri.vn/hoi-lien-hiep-phu-nu-cum-thi-dua-bac-trung-bo-tong-ket-cong-tac-thi-dua-nam-2017> [Accessed on August 1, 2020].
- [17]. Nguyễn Thế Chinh (2020, June 17). Ảnh hưởng của biến đổi khí hậu đối với nước ta: Thực trạng, những vấn đề mới đặt ra và giải pháp. [Online]. Available at: <http://hdll.vn/vi/nghien-cuu---trao-doi/anh-huong-cua-bien-doi-khi-hau-doi-voi-nuoc-ta-thuc-trang-nhung-van-de-moi-dat-ra-va-giai-phap.html> [Accessed on August 1, 2020].

- [18]. Tuyết Chinh (2020, July 22). Bắc Trung Bộ là vùng trọng điểm bão ảnh hưởng năm 2020. [Online]. Available at: <https://baotainguyenmoitruong.vn/bac-trung-bo-la-vung-trong-diem-bao-anh-huong-nam-2020-307437.html> [Accessed on August 1, 2020].
- [19]. Xuân Long (2020, November 23, 17:33 PM). Còn 1-2 cơn bão, áp thấp nhiệt đới có thể hướng vào đất liền Việt Nam. [Online]. Available at: <https://tuoitre.vn/con-1-2-con-bao-ap-thap-nhiệt-doi-co-the-huong-vao-dat-lien-viet-nam-20201123161235772.htm> [Accessed on December 12, 2020].
- [20]. Ban Chỉ đạo Tổng điều tra Dân số và Nhà ở Trung ương (2019). Tổng điều tra dân số và nhà ở thời điểm 0 giờ ngày 01 tháng 4 năm 2019, Tổ chức thực hiện và kết quả sơ bộ. Nhà xuất bản Thống kê. Hà Nội.
- [21]. Tổng cục Thống kê và Bộ Lao động, Thương binh, và Xã hội (2020). Bản tin Cập nhật thị trường lao động Việt Nam, Số 25, quý 1 năm 2020, pp. 1-8.
- [22]. PNVN (2020, January 8). Phụ nữ khuyết tật tập trung ở nhóm phụ nữ khu vực nông thôn. [Online]. Available at: <http://hoilhpn.org.vn/CmsView-EcoIT-portlet/html/print cms.jsp?articleId=32606> [Accessed on August 1, 2020].
- [23]. Đô thị hóa và việc làm của phụ nữ nông thôn (2009, March 3). [Online]. Available at: <https://nhandan.com.vn/tin-tuc-su-kien/%c3%90%c3%b4-th%e1%bb%8b-h%c3%b3a-v%c3%a0-vi%e1%bb%87c-1%c3%a0m-c%e1%bb%a7a-ph%e1%bb%a5-n%e1%bb%af-n%c3%b4ng-th%c3%b4n-526128/> [Accessed on August 1, 2020].
- [24] Mai Đan (2018, January 23). Tỷ lệ lao động nữ tại Việt Nam thuộc nhóm cao nhất thế giới. [Online]. Available at: <http://thoibaotaichinhvietnam.vn/pages/xa-hoi/2018-01-23/ty-le-lao-dong-nu-tai-viet-nam-thuoc-nhom-cao-nhat-the-gioi-52996.aspx> [Accessed on August 1, 2020].