GREEN ECONOMY AND GREEN JOBS: EVIDENCE FROM DELTA STATE, NIGERIA

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Abstract

This study aims to get an insight into the major sectors with a green job potential in Delta State and to further analyze the argument that job creation is one of the important benefits of green growth policies – that is, policies to foster economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies (Bowen and Kuralbayeva, 2015). The claims that the greening of economies is a net generator of decent jobs – good jobs that offer adequate wages, safe working conditions, job security, reasonable career prospects and worker rights (UNEP (2011). There is a great need to promote and create lots of green jobs to make Delta State a better place for future generations. The potential areas of green jobs in Delta State has revealed by the studies include among others: Rubber plantations, cassava (manioc), fish, palm oil and kernels, yams, and plantains, flour-milling plant, sawmilling, solar, wind, geothermal, biomass and water, tourism, building sectors, forestry activities, waste management, railways, health sector**,** government bodies, education sector, Escravos Gas-to-Liquids (EGTL) plant, an integrated steel plant in Aladja, small enterprises and the market within SMEs. The study recommends that for green jobs to thrive in Delta State, there needs to be an increased appreciation for green and sustainable practices; Individualistic efforts from different agents, like governmental agencies, private sector, policymakers, employers, and employees are very important towards the creation of a Green Economy; better integration of employment needs and research programs; and a specific regulatory framework to promote green businesses, and a competitive ecosystem that creates green jobs.

Keywords: Green Economy, Green Jobs, Climate change, Sustainable development, Delta State.

JEL classification: J01, J08

1. INTRODUCTION

The importance of green economy and green jobs is increasing due to the rapid climate change and ever-increasing pollution levels. It is evident that nature and work are intrinsically connected. Our lives depend on the natural environment. Our jobs and businesses depend on a healthy planet. Our future depends on a just transition to a Green economy. Climate change and environmental degradation are already disrupting millions of jobs and livelihoods. Yet countless opportunities lie

ahead to boost the economy and improve the quality of working lives. The International Labor Organization studies show that implementing the Paris Agreement on Climate Change could create a net gain of 18 million jobs by 2030 (ILO, 2018)

The transition to the green economy will be a major trend shaping socioeconomic outcomes worldwide over the next 50 years. This transition will create new economic opportunities, spawning new jobs and spurring the adaptation of existing jobs. One projection is 24 million new jobs created worldwide just by the changes necessary to hold global warming to 2° C (ILO, 2018).

The core tenet of the "green jobs" concept is that net employment losses are not inevitable when shifting from an economy dependent on fossil fuels to one based on renewable energy. That is, when the economy adjusts to more sustainable development, there will be a gain in green jobs that will outweigh the loss of jobs in coal refineries and oil drilling (BLS, 2012).

According to ILO (2018), 18 million more jobs will result from achieving the Paris Agreement's 2°C goal. 24 million jobs will be created and 6 million will be lost, meriting complementary policies to protect workers and ensure that the transition is just. The demand for green jobs is expected to grow significantly in the coming years as the world increasingly recognizes the need to address climate change and other environmental challenges.

Green jobs are those that, in the end, bring an economic sector's and company's environmental effect down to sustainable levels. (ILO 2015a) Green jobs, as defined by the Bureau of Labor Statistics (BLS, 2012), are jobs that either involve making an establishment's production processes more environmentally friendly or ensuring that they use fewer natural resources, or jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources. An output approach (the first definition) and a process approach (the second definition) are combined in these two methods of measuring green jobs. Jobs that are green in the output approach are those that are employed by companies that provide environmentally friendly products or services and fit into one or more of the following five criteria are considered green in the output approach:

1. Renewable energy sources.
2. Energy-efficient furnishings, appliances, structures, cars, and other products and services that raise building energy efficiency as well as the effectiveness of energy distribution and storage.
3. Recycling and reuse, as well as the removal and reduction of greenhouse gas emissions.
4. Conservation of soil, water, and wildlife; sustainable forestry; and organic agriculture.
5. Administration of laws and regulations; advocacy, instruction, and training pertaining to green practices and technologies.

Green jobs build resilience, and the economic opportunity they provide is the largest we will see in our lifetime (Turns, 2020). Many countries have pledged to transition to clean energy sources and reduce their emissions, creating new opportunities for those with the skills and knowledge to support this transition (Weforum, 2023)

Transitioning towards a 'green economy' can not only create a more sustainable and healthier planet, but also give countless opportunities for African youth employment. Creating green jobs is therefore essential to support a green transition (UNEP, 2012).

Nigeria also faces waves of severe impacts of the climate change phenomenon, such as the rising frequency of climate-induced disasters; increased numbers of eco-migrants, with large numbers of internally displaced persons; high level degradation of the ecosystems; massive number of unemployed and underemployed youth, and significant pressures on agricultural production (Johnbosco.et al. 2023).

Despite Nigeria's status as the biggest exporter of fossil fuels in the world, there are relatively few Nigerian jobs in fossil fuel extraction. Stakeholders in Nigeria's Labor sector have identified the creation, transition and implementation of green jobs as a means of balancing the unemployment challenge as well as countering the effects of the ongoing global climate change which has also affected Nigeria.

They made the call in Abuja, Nigeria's capital at a one-day national consultative meeting for the Alliance for Green Jobs Nigeria powered by the Ministry of Labor and Employment and supported by the International Labor Organization (ILO). This proposal to create massive green jobs for Nigerian women and youths was tagged "Green Jobs Alliance for Nigeria " and it is designed as a Public Private Sector Initiative also involving government institutions and the organized Labor (Adidi, 2022).

There is a need to promote and create lots of green jobs to make the world a better place for future generations. It will also put pressure on the businesses to be responsible to the environment. At the state level, consistent efforts should be taken to ensure that opportunities from climate intervention and actions are maximized for creation of green jobs in the oil-rich Delta State of Nigeria.

2. LITERATURE REVIEW

2.1. CONCEPT ON GREEN ECONOMY AND GREEN JOBS

Green Economy, as a concept, is being applied within an increasing number of countries and at a growing scale. At the United Nations Conference on Sustainable Development, world leaders recognized that the transitions made by countries to a green economy could make increasing contributions to sustainable development and poverty eradication through economic diversification, employment creation, export earnings, environmental protection and social equity (UNEP, 2020).

We need a decarbonized economy far sooner than 2050; the economy should urgently be redesigned so that resources are not wasted. This requires serious innovation because our future economy will thrive on reusing, repairing, refurbishing, remaking and repurposing – this transformation will create green jobs (Raworth, 2018).

2.2. WHAT ARE GREEN JOBS?

Various international organizations use a range of definitions for Green Jobs, but there is currently no officially agreed definition. Often, more than one definition is cited, and different definitions can suit different uses.

The International Organization of Employers (IOE), UNEP, ILO, and ITUC utilize the broadest definition of "green jobs," which encompasses a wide range of activities in many sectors:

"Green employment are jobs in manufacturing, services, administration, R&D [research and development], and agriculture that significantly improve the preservation or restoration of environmental quality. Jobs that contribute to the preservation of ecosystems and biodiversity, the decarbonization of the economy, the reduction of energy, material, and water consumption through high-efficiency methods, and the reduction or complete avoidance of waste and pollution generation are all examples of this (UNEP et al., 2008, S. 3).

As defined by the U.S. Department of Labor, *green* jobs are jobs that preserve the environment and jobs that make an organization more environmentally friendly. Green jobs are works in traditional sectors such as agriculture and manufacturing, as well as in green sectors such as renewable energy and waste management.

Green jobs are defined as employment in environmental industries that generate goods and services that minimize environmental hazards, emissions, and resource consumption (Eurostat and OECD, 1999, p. 3; World Bank, 2012, p. 93).

United Nations Environment Program (UNEP) defines green jobs as ‘’decent work which contributes directly to reducing the environmental impact of enterprises, economic sectors or the economy as a whole by reducing energy and resource consumption, reducing emissions, waste and pollution and by preserving or restoring ecosystems’’. The document further states that ‘’Green Jobs need to be decent work; i.e. good jobs which offer adequate wages, safe working conditions, job security, reasonable career prospects, and worker rights’’. Green jobs are the paid employment opportunities that aim towards preserving and restoring environmental quality.

A green job (in context of Nigeria) helps bring about and maintain a transition to environmentally sustainable forms of production and consumption as well as providing decent jobs – good jobs that offer satisfactory wages, safe working conditions, job security, reasonable career prospects and worker rights.

Green jobs can be found in all sectors of the economy, ranging from traditional areas such as agriculture, manufacturing, and transport and buildings, to nascent opportunities for employment in areas such as the energy sector. To put it in a nutshell: green jobs are the basis for a successful energy transition, and promote climate and environmental protection (ilo.org)

2.3. BENEFITS OF CREATING PLENTY OF GREEN JOBS

- Green jobs make a significant and positive difference in tackling climate change and play a key role in preserving our environment, wildlife and nature.
- Green jobs promote sustainable development.
- Air, water and land pollution will be reduced.
- Decarbonizes the world's economy.
- Improving the efficiency of raw materials by reducing the wastage in the production process.
- Greenhouse gas emissions will be reduced.
- Waste minimization.
- In the long-term, companies that avoid damage to the environment will incur fewer expenses.
- Companies that have green jobs will gain the trust of the public, which results in an increase in their brand value.
- For every green job created, there are an additional 1.4 jobs created elsewhere in the economy. This number rises even further in the energy, utilities and manufacturing sectors due to their combination of extensive supply chains and highly paid, skilled jobs.
- Many jobs in the green economy pay more than the median wage, which means that skilled workers have the opportunity to earn more.
- Green jobs are at a lower risk of automation than non-green jobs, especially for middle- and low-skilled workers. This means that these jobs are sustainable, providing long-term, more secure employment opportunities for workers.
- Transitioning to green jobs can create opportunities for training, retraining and upskilling workers. These qualifications are designed to provide the skills that lead directly to jobs in green sectors such as Agriculture, Building and Construction, Engineering, Horticulture and Forestry, and Science.
- Going green and creating green jobs has several other benefits for employers, including tax incentives, improved efficiency, healthier workplaces, and cost savings (ILO, 2009)
- Green jobs provide decent jobs with adequate wages, professional and personal growth opportunities, and a decent and safe lifestyle (ILO, 2007).
- The fundamental benefit of green jobs is that they support a fair transition away from fossil fuels, and toward 100% clean energy.

2.4. OPPORTUNITIES OF GREEN JOBS

- Jobs in the renewable energy sector, construction of eco-friendly buildings, organic
- Farming, food industry, manufacturing, ecological tourism etc.
- Converting existing companies to eco-friendly companies will also create green jobs.
- Some products such as cloth bags are created to have a positive impact on the environment. But the production process may not be eco-friendly. Transforming the production process into green can create environment-friendly jobs.
- There are self-employment opportunities too such as selling zero waste products, recycled products and upcycled products etc.
- The circular economy can create plenty of green jobs.

2.5. SOME OF THE MAIN SECTORS INVOLVED IN THE GREEN ECONOMY PROVIDING GREEN JOBS

- Manufacturing.
- Technology.
- Renewable Energy.
- Green Buildings / Construction.
- Sustainable Transport / Logistics.
- Water Management
- Waste Management / Recycling.
- Environmental Charities, Consultancy and Education.
- Government Bodies.
- Health sector
- Finance.
- Farming / Agriculture / Forestry / Marine.

2.6 EMPIRICAL REVIEW

From the results of its first Green Goods and Services Survey BLS reported that in 2010, 3.1 million Green jobs, which are defined as those that produce goods or provide services that help the environment or conserve natural resources, employed people in the United States who worked in the creation of green goods and services. Out of the 3.1 million green jobs, 2.3 million (73%) are in the private sector, 157,000 (5%) are in the federal government, 227,000 (7%) are in state governments, and 476,000 (15%) are in local governments. In general, compared to jobs in the private sector, government jobs have a higher green intensity (the percentage of jobs that are classed as green). Although the percentage of green jobs in the private sector is only 2.1 percent, it accounts for 5.3 percent of federal jobs, 4.9 percent of state jobs, and 3.4 percent of municipal jobs.

There were 1.7 million green jobs in New York in 2019, 17.3 percent of total employment… Compared to the national average of 18.8%, the percentage of green jobs in the state's employment is lower in New York than in neighboring states like Pennsylvania (20.9%), New Jersey (18.5%), midwestern states like Illinois (21.4%),

and large states like California (18.2%). Green job growth was 13.2 percent between 2015 and 2019, which was more than twice the overall job growth rate of 6 percent. (2019, DiNapoli)

Research by the Institute for Public Policy Research suggests that more than 200,000 jobs could be created in energy efficiency by 2030, and 70,000 jobs in offshore wind alone as soon as 2023, while Thrive Renewables estimates that onshore renewables could deliver 45,000 new jobs by 2035. Regionally, opportunities vary. In north-west England, new jobs focus on increasing wind capacity, while London's green jobs will mostly be in the financial, IT or legal industries. By 2030, there could be 694,000 green jobs in the low-carbon and renewable energy sector across England, rising to more than 1.18m by 2050. There's enormous potential for green growth.

The ILO in its 2019 report Skills for a Greener Future (ILO, 2019) developed a global energy sustainability scenario for 2030 and estimated its net employment effects compared to a "business as usual" scenario. It calculates not only the new jobs created and the jobs destroyed in obsolete energy sub-sectors, but it also estimates the potentials for new jobs to be reallocated to existing energy-sector workers. Globally, it predicts a loss of 7 million existing jobs and the creation of 25 million new jobs, resulting in a net gain of 18 million jobs.

The clean economy currently employs 2.7 million people in the United States. For every million dollars invested in a variety of clean energy projects, such as energy efficiency, renewable energy, and transportation, 16.7 green jobs are produced. The clean energy industry is expanding at an 8.3 percent annual rate. Currently, approximately 150,000 people are employed nationwide in the manufacture of cleaner automobiles and trucks. Green energy jobs have a 13 percent higher median salary than the overall economy. Because green employments are produced in the United States, they encourage innovation more than other industries. We are exporting solar power components to China and have a $1.9 billion positive trade balance in solar power components like photovoltaic and solar heating and cooling components. Jobs in clean energy are beneficial for small enterprises in the United States. Manufacturing occupations with an upward career trajectory account for a large portion of the employment in the green industry. In summary, the creation of green jobs as a result of wise investments in our energy infrastructure is increasing employment prospects, lowering air and water pollution, offering a substitute for foreign oil, and enabling us to export more goods manufactured in the United States to other countries (DiPasquale and Gordon, 2011).

According to the Germany's Environment Agency, the number of "green" jobs in Germany is growing steadily and has increased by 130,000 between 2014 and 2017. The agency's statistics are significantly higher as they included more sectors, including energy and water supply, transport, agriculture and forestry (Schulz, 2019).

India's manufacturing sector is a massive employment hub. India has the capacity to reach USD 1 Trillion by the end of 2025 (IBEF, 2021) and the country

already employs around 20% of its workforce in renewable and green businesses, either directly or indirectly. According to the Bureau of Energy Efficiency, the industrial sector has the highest energy-saving potential up to 60%, which can be realized by 2030. This makes the Indian manufacturing sector an ideal platform for unlocking and developing the green jobs ecosystem by implementing energy-efficient solutions. (Aggarwal and Hurrain, 2022)

Research conducted on green jobs in South Africa estimates that the employment potential in the formal sector of the green economy is approximately 98,000 new direct jobs in the short term (2011-2012), almost 255,000 in the medium term (2013-2017) and around 462,000 employment opportunities or part-time jobs in the long term (2018-2025) in sectors like energy generation, energy and resource efficiency, emission and pollution mitigation, and natural resource management. In the long term, almost 50% of this job creation potential stems from natural resource management – activities associated with biodiversity conservation and ecosystem restoration, as well as soil and land management. Some progress has been made in providing green jobs and employment in South Africa, particularly the government-led Expanded Public Work Programme (EPWP) which creates temporary and/or part-time opportunities for unemployed (Giordano and Makaulule, 2011)

Most of the "green business" opportunities in Turkey are in various renewable energy fields such as solar, wind, geothermal, biomass and water. In addition, there is employment potential in the tourism, agriculture, and building sectors within the framework of sustainability. According to a Greenpeace study from 2015, employment in the energy sector could rise to 58% above 2012 levels with 133,000 (~1% of the total employment) in 2030. It is estimated that renewable energy will be able to meet 74% of energy employment by 2030, with the largest share belonging to biomass (29%) and solar heating. (Yimaz, 2020).

The 2019 U.S. Energy and Employment Report found that the U.S. Traditional Energy and Energy Efficiency sectors employed "approximately 6.7 million Americans or 4.6% of a workforce of roughly 147 million" in 2018, an increase of 2.3% from the previous year. Of these, solar and wind employed a total of 343,000 full-time workers, though solar jobs declined 3.2% and wind jobs increased 3.5% from 2017 to 2018. Battery storage, an essential sector to the clean energy transition, grew 18% in 2018. Energy efficiency jobs also grew 1.6% in 2018 to almost 1.3 million. "Green jobs" including jobs in sectors relating to zero emission energy generation, electric vehicles, energy efficiency, and others vary greatly across the economy in wages and requirements for level of educational attainment.

According to a Brookings report published in 2020, any clean energy occupations "pay higher wages while posing lower formal educational barriers to entry compared to all jobs nationally." Solar PV installers and construction laborers average pay close to the national mean of $25 per hour and lack stringent higher education and training requirements, while environmental engineering jobs are often highly specialized but pay almost twice the national average (Gagnon, 2020).

In a 2013 report published by the ILO, the Evaluation of the Potential of Green Jobs in Mexico, the organization analyzed for the first time the number and potential of green jobs in the country. Back in 2011, employment reached 40.5 million jobs, half of these were concentrated in three sectors: commerce (20%), manufacturing industry (15%) and agriculture (15%) (ENOE,2011). Of the 40.5 million employed, 66.5% (26.9 million) worked informally (ENOE, 2011); these included subsistence farming, paid housework, and workers within the informal sector. The main problem in the Mexican labor market was the poor working conditions; where more than 46% of employees lacked contracts and 40% had no benefits. A total 1.815 million direct environmental jobs were found which represented about 4.5% of the workforce in 2011(Prat, 2020).

According Statistics Canada (2019) reported 40,289 environmental jobs in the waste management industry and 82,312 in clean technology associated with a low carbon economy. Eco Canada breaks green jobs down further as: resource management, environmental protection and sustainability. This intricacy characterizes Canada's green workforce as well spread out across the nation, offering competitive salaries and potentially cross-sectoral and multi-disciplinary jobs. In 2018, green jobs were listed in 90% of the 500 jobs listed in Canada's Occupational Classification Codes. Keeping up is thus challenging as new areas open and existing jobs become green (Szoller, 2020)

Brazil currently has over 6.5 million jobs linked to considered green environmental sectors in the Brazilian economy, such as water, sewage and waste management, forestry and transport. This represents over 6% of the total number of jobs in Brazil. The overall prediction is that this number will continue to grow as the demand of the global productive sectors for environmentally friendly services and products grows and the ongoing climate crises presses for more sustainability (Luiza and Karpavicius, 2020).

According to the LinkedIn Global Green Skills Report 2022, the demand for green talent is already outstripping supply. The share of green talent in the workforce has increased by more than 38 percent since 2015. Most green skills are being used in jobs you may not expect — for example, fleet managers, data scientists, health workers, construction managers and technical sales representatives. We expect to see millions of new jobs created globally in the next decade driven by new climate policies and commitments," says LinkedIn chief executive Ryan Roslansky. For example, the number of jobs in renewables and the environment in the United States has increased by 237 percent over the last five years. In contrast, oil and gas jobs have only grown by 19 percent. Workers at all levels of education are growing their green skills. But, globally, the rate is faster among those with a bachelor's degree or higher. The share of green talent in this category grew at an average of 11 percent a year between 2015 and 2021, compared to 9 percent for other workers (Masterson, 2022).

3. RESEARCH METHOD

The data used for the study are secondary in nature. This involves the collection of data from already published text available in the public domain. These published literature sources include textbooks, government or private companies' reports, newspapers, magazines, United Nations Environment Programme (UNEP) Reports, International Labor Organization (ILO) Publications, Google search, online published papers and articles.

4. DELTA STATE AND POTENTIAL AREAS OF GREEN JOBS

Delta is a southern Nigerian state. Its borders are as follows: the Atlantic Ocean's Bight of Benin to the west, the state of Ondo to the northwest, the states of Anambra to the east, Rivers to the southeast, Bayelsa to the south, and Edo to the north. The state's eastern and southern borders are formed by the Niger River's delta and lower course. In 1991, the southern portion of the former Bendel state was divided to become Delta. Asaba is the state capital, located on the Niger River. In the Niger River delta, the majority of the state is below 500 feet (150 meters) in elevation. The majority of the swamps in the delta are mangroves, which combine with freshwater wetlands to the north. Transportation is facilitated by a network of interconnecting waterways including the rivers Forcados and Escravos, which empty into the Bight of Benin. The people who live in the state are the Itsekiri, Urhobo, Isoko, and Ijo in the south and west, the Edo in the north, and the Igbo in the east.

Delta State has been an agrarian economy, 'green jobs' have long existed in the State. The state's economy is based primarily on agriculture; crops farmed for local use include rice, oil palm products, yams, cassava (manioc), and corn (maize). Through the ports of the Niger Delta at Burutu, Forcados, Koko, Sapele, and Warri, Delta is a significant exporter of petroleum, rubber, lumber, and palm oil and kernels. The Ughelli oilfield export petroleum by pipeline, and there are further large oil fields offshore and close to Warri (which has an oil refinery), Koko, and Escravos. The industries in the state include sawmills, plastics, rubber, plywood, glass and bottle factories, textile mills, boat building, and furniture manufacturing. Adja, which is close to Warri, is home to a sizable steel production facility. A bridge connects Asaba and Onitsha across the Niger. 6,833 square miles (17,698 square kilometers) Pop. (2006) 4,098,391(Britannica, 2023).

Available statistics shows that Unemployment is high in Delta State. Delta State has total labor force of 2,494,452 and resident unemployed (1,005, 848). NBS 2nd quarter 2020 ranked the State third among the South-South States at unemployed rate of 40.36% and underemployed 20.1%. This implies that the youth unemployment rate will even be higher and has been estimated to be in the region of about 64% (PIND, 2023).

Jobs that have a direct, positive impact on the planet traditionally involve renewable energy, electric transport, energy efficiency or nature conservation. But right now, as more sectors transition to low-carbon models, every job has the

potential to become "green". (Turns, 2020). According to the *UK Governments Green Jobs Taskforce Final Report,* Every job has the potential to become 'green' as the world moves to combat climate change. The following are potential areas of green jobs in Delta State

- Rubber plantations, cassava (manioc), fish, palm oil and kernels, yams, and plantains, flour-milling plant, factories for making shoes, tiles, plastics, and chemicals. Sawmilling (obeche, abura, sapele, and mahogany). Its plywood- and veneer-manufacturing plant is one of the largest in western Africa located in Sapele.
- Escravos Gas-to-Liquids (EGTL) plant in Escravos, The GTL plant converts natural gas into premium environmentally friendly fuel, diesel, and GTL naphtha products. Europe is the primary market for all fuel products from the Nigerian plant although some products are sold in the US.
- Sapele Port, Escravos Bar, the Ethiope and Jamieson rivers.
- Cassava [manioc], plantains, sugarcane, palm oil and kernels, sheet glass, glass bottles, and natural gas in Ughelli.
- An integrated steel plant in Aladja.
- forestry activities
- Waste management: recycling of solid urban waste.
- Small enterprises and the market within SMEs
- Solar, wind, geothermal, biomass and water. In addition, there is employment potential in the tourism, agriculture, and building sectors within the framework of sustainability.

5. CONCLUSION AND RECOMMENDATIONS

Green jobs help create an environmentally and economically sustainable society that drastically reduces its greenhouse gas emissions; encourages energy independence from oil; eliminates the worry of heating and cooling one's home; and increases food security, all while providing millions of high-quality, well-paying, long-term jobs, thus bringing millions of people into a stable middle class. The study recommends that for green jobs to thrive, there needs to be an increased appreciation for green and sustainable practices, a specific regulatory framework to promote green businesses, and a competitive ecosystem that creates green jobs. The private sector has the potential to play a huge role in establishing a strong foundation for green jobs in Delta State. Individualistic efforts from different agents, like governmental agencies, policymakers, employers, and employees are very important towards the creation of a Green Economy. There needs to be better integration of employment needs and research programs. The need for legal conditions and creating support programs for research and businesses will boost green jobs and the economy in general and help to fulfill Nigeria's commitments under the Paris Agreement.

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