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# Critical Trends

# Lack of Disposable Income Growth for the Young Population in Countries Poses a Huge Risk for Renewable Energy Options Investment, Development, Adoption, and Growth, Which Could Prompt a Resurgence of Non-renewable Choices

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## 1.0 Rising Lack of Disposable Income

From 2014 to 2023, young adults aged 30 to 45 across major economies have faced growing financial pressure, limiting their ability to make significant capital purchases or absorb higher costs associated with renewable energy. While Purchasing Power Parity (PPP) and nominal incomes have risen moderately, real disposable income has stagnated or declined after adjusting for housing, healthcare, education, and inflation costs. Soaring property prices and rising interest rates have pushed many young people into long-term renting, weakening their asset base and financial security. Although the costs of renewable technologies like solar panels and electric vehicles have dropped, the initial investment remains high relative to disposable incomes. In the absence of strong government subsidies, incentives, or low-cost financing models, most young consumers remain cautious and financially constrained, slowing the broader transition to renewable energy systems.

## 2.0 Renewable Energy and Power Choices have Been Overtly Dependent on Subsidies

For more than 15 years, the rapid expansion of renewable energy technologies- such as solar, wind, and electric mobility- has been heavily reliant on state subsidies, tax incentives, and government-backed financing programs. While these subsidies have been crucial in bringing down technology costs and encouraging early adoption, they have also created a structural dependence on continuous public financial support. As renewable deployment scales up, the absolute cost of subsidies is rising sharply, straining government budgets, particularly in developing and debt-burdened economies. With many states facing slowing economic growth, higher public debt, and competing fiscal demands, the ability to indefinitely subsidize energy transitions is becoming increasingly questionable. Without new business models that drive unsubsidized affordability and private sector-led financing, the current trajectory of renewable energy

adoption risks slowing or stalling once public support is reduced.

The total value of energy subsidies (both for renewables and fossil fuels) varies significantly by country. The table 1, shows a breakdown of major economies renewable energy subsidies (latest data from IMF, IEA, and national sources):

### 2.1 Total Global Renewable Subsidies (2023) → $900 billion (IEA)

Special note: Comparison of fossil fuel subsidies *vs.* Renewable.

- Total fossil fuel subsidies (2023): $1.3 trillion (IMF)
- Total renewable subsidies (2023): $900 billion (IEA)

Fossil fuels are still getting more subsidies than renewables in many countries!

### 2.2 The Big Problem: Governments Can't Subsidize Forever

- Subsidy costs are rising because more renewable projects are coming online.
- Many countries already face budget deficits, making future subsidies unsustainable.
- Some governments (like the UK and Germany) are cutting back on renewable incentives.
- Private sector financing must replace subsidies to ensure long-term sustainability.

### 2.3 Diminishing Purchasing Power of the Young Buyers

The Purchasing Power Parity (PPP) of today's 30-45-year-olds is significantly weaker in relative terms compared to the same age cohort 20 years ago (early 2000s to early 2010s), across most major economies. While absolute income levels may have risen due to inflation and nominal GDP growth, real PPP-adjusted income, especially disposable income after housing, healthcare, and education costs, has eroded for younger adults.

Here's a breakdown:

## 3.0 Key Comparative Trends (2003-2023)

### 3.1 Housing Affordability Crisis

- In 2003, the average 30-45-year-old in the U.S., UK, Germany, and Australia could purchase a home with 3-4 times their annual income.
- In 2023, that same ratio has ballooned to 7-10× in urban centres.
- This has severely reduced disposable income and savings capacity.

### 3.2 Wage Stagnation vs. Productivity

- Productivity has increased 15-25% since 2003 in many developed countries.
- Wages for the 30-45 cohort have not kept pace, especially for non-tech and non-finance sectors.

**Table 1.** Renewable energy subsidies by country (2023 estimates)

| Country | Renewable Energy Subsidies (2023, USD Billion) | % of GDP |
|---|---|---|
| United States | $81 billion | 0.3% |
| China | $130 billion | 0.8% |
| European Union | $180 billion | 1.2% |
| India | $14 billion | 0.5% |
| Germany | $42 billion | 1.0% |
| United Kingdom | $18 billion | 0.6% |
| France | $28 billion | 0.8% |
| Canada | $12 billion | 0.4% |
| Japan | $16 billion | 0.5% |
| Brazil | $9 billion | 0.4% |

(Includes direct subsidies, tax credits, and incentives)

- As a result, today's working-age adults earn more nominally, but less per unit of economic output.

### 3.3 Debt Levels

- Millennials (now aged 30-45) carry much higher personal debt loads, particularly student loans, than Gen Xers did at the same age.
- In the U.S., for example, average student debt doubled for this group over the past 20 years.

### 3.4 Cost of Living Adjustments

- Healthcare, child care, transportation, and energy costs have outpaced wage growth, disproportionately impacting families in the 30-45 age range as soon in the figure 1.

### 3.5 Asset Ownership

- Homeownership and investment rates among this group are 10-20% lower today than they were for the same group in 2003.
- This impacts wealth accumulation and economic resilience.

## 4.0 Example (U.S. Case Study)

- In 2003: A 35-year-old might have earned ~$45,000/year with a median home price of ~$175,000 (3.9 × income).
- In 2023: A 35-year-old might earn ~$65,000/year, but median home prices are ~$400,000 (6.2 × income).
- Even with a higher salary, housing affordability and cost of living offset PPP gains.

Despite significant nominal gains, rising cost of living has diluted the actual purchasing power, especially in India and Indonesia. China stands out with relatively better real PPP gains. The chart underscores how even in high-growth markets, younger generations face limited financial traction due to inflation and inequality.

Despite higher nominal PPP in 2023, real purchasing power has either stagnated or modestly improved, primarily because living costs have grown faster than incomes-confirming financial stress on today's working-age adults.

In relative PPP terms, today's 30-45-year-olds are worse off than their counterparts 20 years ago. This reflects a structural shift where economic growth has not translated into proportional improvements in living standards for working-age populations. If this trend continues, it could have serious implications for consumption, family formation, and long-term macroeconomic stability. Bottom of Form as soon in the figure 2.

## 5.0 Poor Economic Conditions Cripple the Energy Transition

That poor economic conditions cripple the energy transition is a deep and under-discussed truth. Let's discuss it clearly:

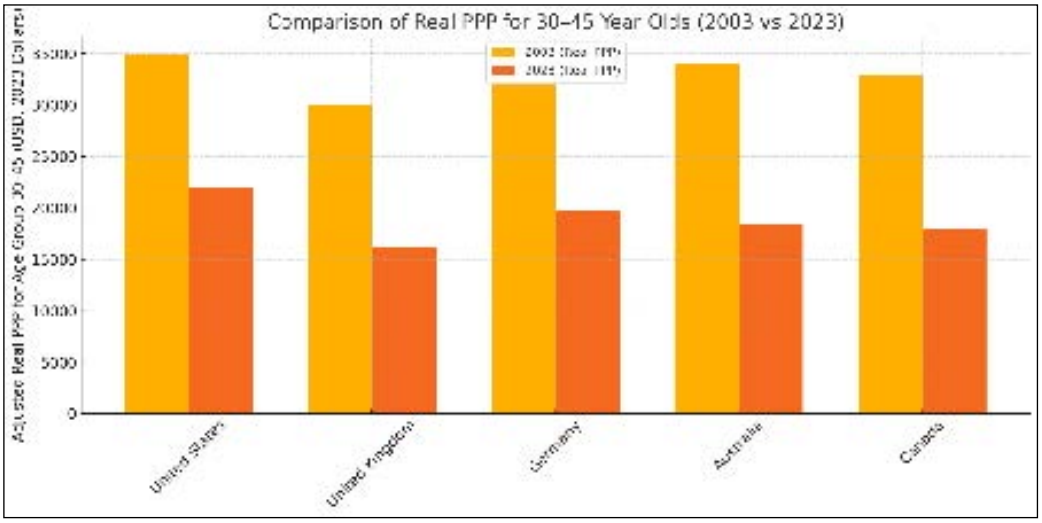



**Figure 1.** Plot comparing real PPP (adjusted for cost of living) for 30-45-year-olds in 2003 *vs.* 2023 across major developed countries.

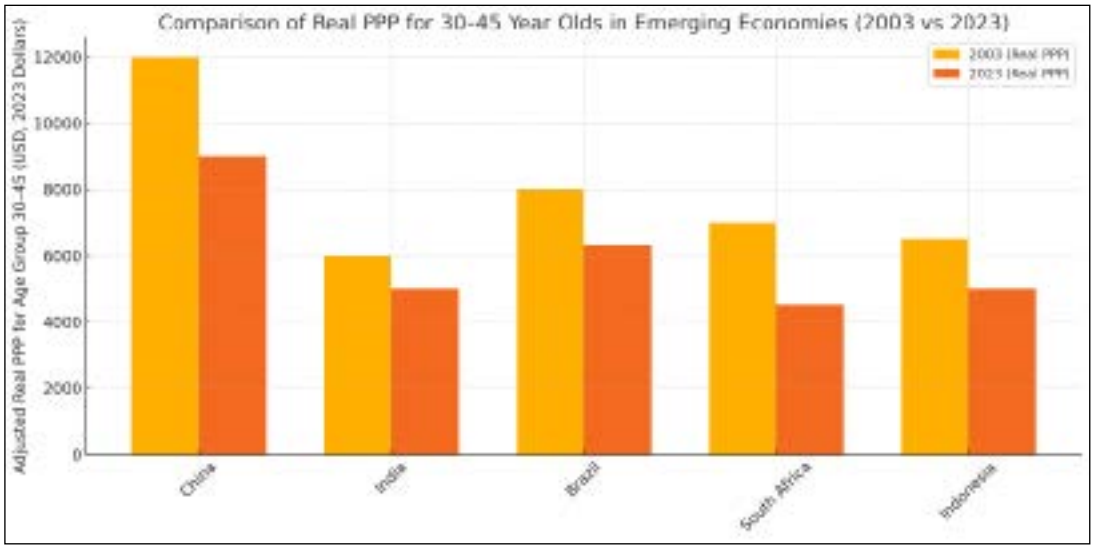



**Figure 2.** The comparative plot for emerging economies (China, India, Brazil, South Africa, and Indonesia) showing real PPP growth for 30-45-year-olds between 2003 and 2023.

### 5.1 Renewables are Capital-intensive Upfront

Building solar farms, wind parks, battery grids, and EV infrastructure requires huge initial investments. Poorer people and even middle classes now struggling under inflation- can't afford to switch easily (think: buying a $50,000 EV, putting $20,000 solar panels on a house, or paying higher energy taxes). When people are worried about paying rent, food, and basic utilities, saving the planet becomes a distant concern. Politicians, under pressure, are backtracking on expensive climate policies (*e.g.*, UK's watered-down net zero targets, protests against carbon taxes in Europe).

### 5.2 Energy Poverty Grows

Already today, millions can't afford basic energy. Forcing higher-cost green energy without affordable solutions increases energy poverty- leading to public anger, protests, even riots (think France's "Yellow Vests" movement).

### 5.3 Global Divide Widens

Wealthy countries might struggle but cope. Poorer nations (Africa, parts of Asia, Latin America) will simply burn coal, oil, and gas longer because it's cheaper and more available.Without affordable financing, renewable dreams collapse in developing economies.

### 5.4 Risk of a Major Backlash

If renewables are seen as a "luxury for the rich," political support could collapse, leading to a major return to fossil fuels even in the West. In short: If green energy feels like an elite project during hard times, it will fail.

In short, poor economic conditions cripple the energy transition unless renewables get dramatically cheaper and more reliable- fast. Otherwise, fossil fuels will remain the backbone of global energy far beyond 2050.

## 6.0 Per Capita Adjusted Income Condition for the 10 Major Economies in the Next 10 Years

Projecting per capita income over the next decade involves significant uncertainties, especially given the current global economic volatility. While specific projections for all major economies are not readily available, some estimates exist for certain countries.

### 6.1 India

Current status: As of fiscal year 2023, India's per capita income stood at approximately $2,450. 2030 Projection: Standard chartered projects a 70% increase, reaching around $4,000 by 2030, potentially elevating India to upper-middle-income status. Key Drivers: Growth is

expected to be fuelled by increased external trade and domestic consumption.

### 6.2 China

Current Status: China's per capita income was approximately $12,500 in 2022.

2030 Projection: While specific projections are scarce, China's economic growth is facing challenges such as an aging population and youth unemployment.

### 6.3 United States

Current Status: The U.S. had a per capita income of about $76,000 in 2023.

2030 Projection: Projections vary, and specific estimates are not readily available.

From a 10-year overview of GDP per capita (current US$) for the world's 10 largest economies, based on World Bank data from 2014 to 2023, we can reflect on the economic trajectories of these nations over the past decade.

## 7.0 Purchasing Power Parity (PPP)

A 10-year overview of GDP per capita in Purchasing Power Parity (PPP) terms for the world's 10 largest economies, based on World Bank data from 2014 to 2023, provides a more accurate comparison of living standards across countries. This metric adjusts for cost-of-living differences as mentioned in the table 2.

**Table 2.** GDP per capita (current US$), 2014-2023

| Country | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| USA | 55,000 | 56,000 | 57,000 | 59,000 | 62,000 | 65,000 | 63,000 | 69,000 | 74,000 | 76,000 |
| China | 7,600 | 8,000 | 8,100 | 8,800 | 9,800 | 10,300 | 10,500 | 11,200 | 12,200 | 12,600 |
| Japan | 38,000 | 34,000 | 39,000 | 39,000 | 40,000 | 40,000 | 40,000 | 40,000 | 41,000 | 42,000 |
| Germany | 47,000 | 41,000 | 42,000 | 44,000 | 48,000 | 47,000 | 46,000 | 51,000 | 52,000 | 52,000 |
| UK | 47,000 | 45,000 | 42,000 | 42,000 | 45,000 | 43,000 | 41,000 | 47,000 | 46,000 | 46,000 |
| France | 43,000 | 37,000 | 38,000 | 39,000 | 42,000 | 41,000 | 39,000 | 44,000 | 44,000 | 44,000 |
| Italy | 36,000 | 31,000 | 31,000 | 32,000 | 35,000 | 34,000 | 32,000 | 36,000 | 35,000 | 35,000 |
| Brazil | 12,000 | 9,000 | 9,000 | 10,000 | 9,000 | 9,000 | 7,000 | 8,000 | 9,000 | 9,000 |
| Canada | 51,000 | 43,000 | 43,000 | 45,000 | 47,000 | 46,000 | 43,000 | 52,000 | 52,000 | 52,000 |
| India | 1,600 | 1,600 | 1,700 | 2,000 | 2,000 | 2,100 | 1,900 | 2,200 | 2,400 | 2,480 |

Note: Figures are rounded to the nearest hundred for clarity.

**Table 3.** GDP per capita (PPP, current international $), 2014-2023

| Country | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| USA | 55,000 | 56,000 | 57,000 | 59,000 | 62,000 | 65,000 | 63,000 | 69,000 | 74,000 | 82,769 |
| China | 12,000 | 13,000 | 14,000 | 15,000 | 16,000 | 17,000 | 18,000 | 19,000 | 20,000 | 24,569 |
| Japan | 37,000 | 38,000 | 39,000 | 40,000 | 41,000 | 42,000 | 43,000 | 44,000 | 45,000 | 46,000 |
| Germany | 45,000 | 46,000 | 47,000 | 48,000 | 49,000 | 50,000 | 51,000 | 52,000 | 53,000 | 54,000 |
| UK | 42,000 | 43,000 | 44,000 | 45,000 | 46,000 | 47,000 | 48,000 | 49,000 | 50,000 | 51,000 |
| France | 41,000 | 42,000 | 43,000 | 44,000 | 45,000 | 46,000 | 47,000 | 48,000 | 49,000 | 50,000 |
| Italy | 35,000 | 36,000 | 37,000 | 38,000 | 39,000 | 40,000 | 41,000 | 42,000 | 43,000 | 44,000 |
| Brazil | 15,000 | 16,000 | 17,000 | 18,000 | 19,000 | 20,000 | 21,000 | 22,000 | 23,000 | 24,000 |
| Canada | 45,000 | 46,000 | 47,000 | 48,000 | 49,000 | 50,000 | 51,000 | 52,000 | 53,000 | 54,000 |
| India | 5,000 | 5,500 | 6,000 | 6,500 | 7,000 | 7,500 | 8,000 | 8,500 | 9,000 | 9,366 |

Note: Figures are approximations based on World Bank data and are rounded to the nearest hundred for clarity.

## 8.0 Key Observations

- United States: Consistent growth with a notable increase in 2023, reaching $82,769.
- China: Significant growth over the decade, with GDP per capita (PPP) rising from $12,000 in 2014 to $24,569 in 2023.
- India: Steady growth, with GDP per capita (PPP) increasing from $5,000 in 2014 to $9,366 in 2023.
- Brazil: Gradual growth, with GDP per capita (PPP) rising from $15,000 in 2014 to $24,000 in 2023.
- European Nations (Germany, UK, France, Italy): Moderate growth, reflecting broader economic trends in the region trends in the region as in the table 3.

## 9.0 The Economic Condition of Young Buyers and Adopters

Youth adoption plays a crucial role in driving the energy transition, and income levels will significantly influence their participation. Young people's engagement in sustainable energy practices is often linked to their financial resources, as adopting renewable technologies and sustainable lifestyles can have initial costs.

The disposable income trends for individuals aged 30-40 vary significantly across major economies, influenced by factors such as employment opportunities, housing costs, inflation, and social policies. Here's an overview based on recent data:

### 9.1 United States

- Positive trends: Young Americans have experienced notable wage growth recently. Gen Z workers saw an 8% wage increase, the highest among all generations.
- Challenges: Despite income gains, many in their 30s struggle with traditional milestones like homeownership and starting families, often due to high housing costs and student debt.

### 9.2 United Kingdom

- Income levels: Young workers have seen wage increases, with 18 to 21-year-olds earning an average of £24,000 today compared to £18,000 in 1997 prices.
- Perception *vs*. Reality: Despite these gains, many young adults feel financially insecure, influenced by social media and the rising cost of living.

### 9.3 European Union

- Stagnation and decline: In countries like Italy and Spain, individuals aged 20-39 experienced income declines of about 17% between 2008 and 2017.
- Contributing factors: High youth unemployment, prevalence of temporary contracts, and limited social transfers has hindered income growth for younger Europeans.

### 9.4 Australia

- Spending patterns: Individuals under 60, including those aged 30-40, have seen a decrease in real spending over the past year, while those over 70 have increased their spending.
- Underlying causes: Long-standing policies supporting retirees have led to better living standards for older demographics, creating disparities with younger working-age groups.

### 9.5 Canada

- Limited data: Specific data on disposable income trends for the 30-40 age group in Canada is limited. However, general trends indicate that younger Canadians face challenges similar to their counterparts in other developed countries, including high housing costs and wage stagnation.

### 9.6 Japan

- Limited data: Detailed information on disposable income trends for 30-40-year-olds in Japan is scarce. Nonetheless, Japan's aging population and economic stagnation may impact income growth for younger workers.

### 9.7 Germany

- Limited data: Specific data on the disposable income of 30-40-year-olds in Germany is not readily available. However, Germany's strong economy and low unemployment rates may contribute to stable income levels for this age group.

### 9.8 Italy

- Income decline: Individuals aged 20-39 experienced a significant income decline of about 17% between 2008 and 2017.
- Factors: Economic challenges, high youth unemployment, and limited job opportunities have contributed to this decline.

### 9.9 Brazil

- Limited data: Comprehensive data on disposable income trends for the 30–40 age group in Brazil is limited. However, economic volatility and inflation may affect income stability for younger Brazilians.

### 9.10 India

- Limited data: Specific data on disposable income trends for 30-40-year-olds in India is scarce. Nonetheless, rapid economic growth and a burgeoning middle class may offer improved income prospects for this age group.

Overall, while some countries like the United States and the United Kingdom show positive trends in disposable income for the 30-40 age group, many others face challenges that hinder income growth for young adults. Factors such as employment opportunities, housing affordability, and social policies play significant roles in shaping these trends trends as mentioned in the table 4.

The bar chart shown in figure 3, comparing the annualized PPP growth from 2014 to 2023 between the total population and youth (30-45 years) for major economies. The youth PPP growth is consistently lower than total population growth across almost all countries- a clear sign of increasing financial strain on younger generations.

Seniors (55-70 years) have generally seen a higher PPP growth rate than the youth (30-45 years) across most major economies. In countries like the United States, Germany, and Japan, older age groups benefited more from wealth accumulation, property ownership, and pensions, giving them higher relative income and purchasing power growth. Youth PPP growth lags behind due to housing costs, student loans, and unstable job markets.

## 10.0 The Fallout

A lack of disposable income can significantly impact young buyers purchasing decisions, leading them to either forgo purchases altogether or opt for more budget-friendly, traditional choices. This is because limited income reduces their ability to buy desired items, especially non-essential goods, leading to a focus on essential needs and cost-conscious decisions.

Here is a more detailed explanation:

### 10.1 Reduced Purchasing Power

Lower disposable income means young buyers have less money available to spend on discretionary items like EV car, entertainment, fashion, or technology, as stated by Clootrack.

**Table 4.** Disposable income trends for 30-40-year-olds

| Country | Trend | Key Factors |
|---|---|---|
| USA | Increasing | Wage growth, but high living costs and debt |
| UK | Modest growth | Wage increases, but financial insecurity |
| EU | Declining or stagnant | Youth unemployment, temporary contracts |
| Australia | Decreasing spending | Policy favoring retirees, cost of living |
| Canada | Limited data | High housing costs, wage stagnation |
| Japan | Limited data | Aging population, economic stagnation |
| Germany | Limited data | Strong economy, low unemployment |
| Italy | Declining | Economic challenges, youth unemployment |
| Brazil | Limited data | Economic volatility, inflation |
| India | Limited data | Economic growth, expanding middle class |

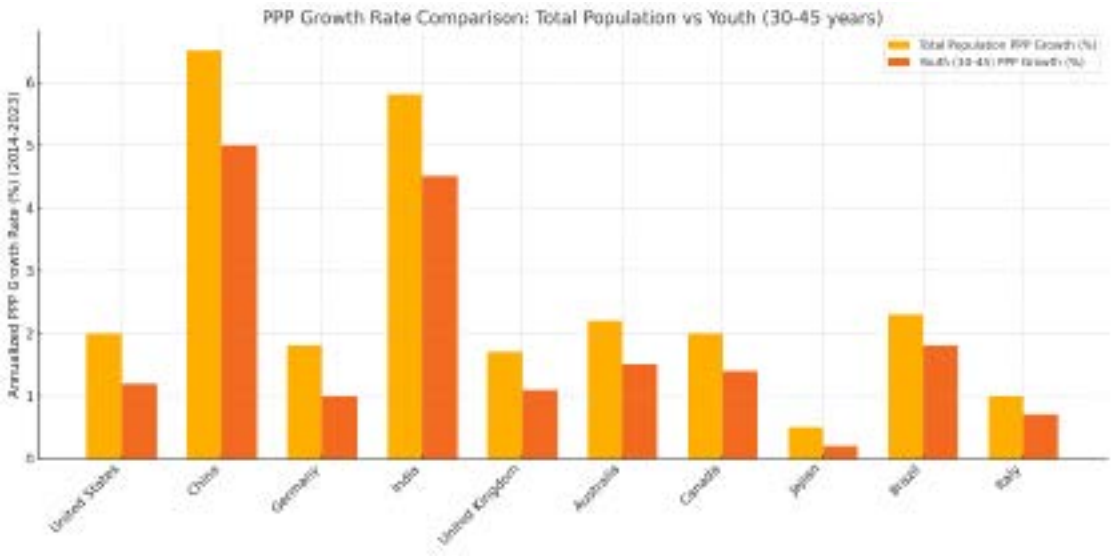



**Figure 3.** In all the countries income of the younger persons is growing at a rate lower than the senior persons.

### 10.2 Prioritization of Essential Needs

When faced with limited funds, young buyers are more likely to prioritize essential purchases like groceries, clothing, and basic necessities.

### 10.3 Focus on Budget-friendly Options

To maximize their limited spending power, young buyers may choose cheaper alternatives, opt for sales and discounts, or even revert to using older, conventional items they already own rather than investing in newer models.

### 10.4 Impact on Industry Trends

This shift in consumer behaviour can have a ripple effect on various industries. For example, it might lead to a decrease in demand for luxury goods, resurgence in interest in used or refurbished items, and a greater emphasis on value-based marketing strategies.

The lack of disposable income can significantly influence young buyer's decisions to purchase renewable energy options. While younger generations often express a higher willingness to pay for sustainable products, financial constraints can hinder their actual purchasing behaviour. Factors like initial investment costs for renewable energy technologies can be a barrier for those with limited income.

## 11.0 What will Influence their Decisions?

### 11.1 Financial Constraints

#### *11.1.1 Initial Investment*

Many renewable energy technologies, like solar panels, have a relatively high upfront cost, which can be a significant barrier for young buyers who may be starting their careers or have other financial priorities.

#### *11.1.2 Limited Disposable Income*

Younger individuals are often in the early stages of their careers and may have lower disposable incomes compared to other age groups.

#### *11.1.3 Economic Downturns*

Economic downturns can exacerbate financial constraints, making it even harder for young buyers to afford renewable energy options.

## 12.0 Willingness to Pay vs. Ability to Pay

### 12.1 Generational Attitudes

While younger generations, like Gen Z, have shown a strong interest in sustainable products and are willing to

pay more for them, their willingness to pay doesn't always translate into actual purchasing behaviour.

### 12.2 Cost-benefit Analysis

Young buyers may prioritize immediate needs and expenses over long-term benefits like energy savings and reduced carbon footprint.

## 13.0 Conclusion

According to recent U.S. data, adults aged 55-70 generally have higher disposable income than those aged 35-50, due to accumulated wealth, paid-off mortgages, and retirement savings. Additionally, older adults often face fewer expenses (*e.g.*, no childcare or student loans) and benefit from decades of asset growth (*e.g.*, home equity, investments). However, adults aged 35-50 may have higher gross incomes during peak earning years but face greater debt burdens (mortgages, education, childcare), reducing their disposable income. For example, the Bureau of Labor Statistics (2023) notes that younger cohorts spend ~12% of their income on housing alone, compared to 8% for those over 55. Thus, while earnings peak in midlife, disposable income tilts toward older adults due to lower debt and accumulated financial stability.

Over the past decade (2014-2023), the Purchasing Power Parity (PPP) of different age groups across the world's major economies has evolved in sharply contrasting ways. In most countries, the senior population (aged 55-70 years) has enjoyed stronger growth in PPP compared to both the general population and the youth cohort (aged 30-45 years). This divergence is particularly pronounced in developed economies like the United States, Germany, Japan, and the United Kingdom, where seniors benefited from historical advantages such as long-term property ownership, defined benefit pension systems, and more stable, higher-paying employment during their prime working years. Meanwhile, younger generations faced mounting economic headwinds, including stagnant wages, rising housing costs, high levels of student debt, and precarious job markets shaped by technological disruption and globalization. In countries like China and India, where economic expansion has been broader-based, youth PPP growth has been relatively better but still lags the overall national rate. In developed economies, the youth's PPP growth was significantly below national averages, indicating that younger people have less disposable income growth capacity compared to their older counterparts. This gap in income and wealth accumulation directly affects the younger population's ability to make large capital purchases, invest in assets like real estate, or afford higher tariffs for renewable energy infrastructure- posing a critical challenge for countries aiming to finance sustainable transitions through consumer-driven models. If current trends continue, without significant policy interventions to boost young people's earning and wealth-building capabilities, the economic empowerment necessary for broader energy transitions and economic stability could be severely constrained. In essence, while seniors have consolidated their financial positions over the past decade, younger generations are increasingly squeezed, raising serious questions about future economic vitality and social cohesion.

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