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# THE INTEGRATED APPROACHES CONCERNING THE ENVIRONMENT, PUBLIC AND SYSTEMS MANAGEMENT USED TO PUBLIC HEALTH PROTECTION: JORDANIAN PRACTICE

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## ABSTRACT

**Research Aim:** To assess the efficacy of existing environmental and public health policies, pinpoint their gaps, and suggest innovative strategies for Jordan.

**Methods:** The study covers urban, suburban, and rural areas in Jordan. A stratified sample of 200 participants was used to ensure diversity. Data was collected from health sector stakeholders using surveys and interviews.

**Results:** While this correlation is promising, challenges such as limited community engagement and poor interagency collaboration hinder policy implementation.

**Conclusions:** The analysis highlights the need for integrated approaches that involve communities and foster cross-sector communication. The findings offer practical recommendations for enhancing public health protection in Jordan, particularly amid growing global pressures on environmental and public health systems.

**Keywords:** Environmental policies, public health systems, policy integration, health outcomes, air quality.

## INTRODUCTION

The efficacy of environmental and public health policies depends on their implementation, integration, and resource availability. Health Impact Assessments (HIAs) effectively identify health impacts of proposed policies, particularly in urban planning, but lack of standardization and integration limits their potential [1]. The European Green Deal integrates climate action across sectors, reducing health risks from air and water

pollution [2].

The COVID-19 pandemic highlighted the benefits of integrated approaches, such as improved air quality during lockdowns, though fragmented frameworks often fail to ensure long-term sustainability [3]. Stringent air quality regulations reduce premature mortality in polluted urban areas, but enforcement and public awareness are critical [4].

Community-based approaches address local health disparities effectively, yet resource shortages and political barriers hinder scalability [5]. Globally, clean air and water policies reduce disease burden, but transboundary issues require stronger international cooperation [6].

The One Health approach effectively tackles zoonotic diseases through cross-sector collaboration, though funding and political commitment remain challenges [7]. Air pollution policies reduce respiratory and cardiovascular diseases, but gaps in monitoring and enforcement persist [8].

Climate adaptation policies mitigate health risks from extreme weather, though efficacy varies by region due to governance and resource differences [9]. HIAs identify unintended health impacts of environmental policies, but early integration into planning is essential [10].

Clean water access policies reduce waterborne diseases globally, yet inadequate infrastructure and funding limit their impact [11]. Policies addressing social determinants, like housing and environmental quality, reduce health inequalities but require alignment with broader public health goals [12].

Equity-focused policies address environmental health disparities in marginalized communities, though political and economic barriers often constrain their efficacy [13]. Climate mitigation policies, such as renewable energy promotion, reduce emissions and air pollution-related health risks, but integration into national health strategies is crucial [14].

Finally, the One Health approach combats emerging infectious diseases effectively, but sustained political commitment and international collaboration are necessary [15].

While many policies show positive results, their long-term efficacy depends on addressing barriers like insufficient funding, weak coordination, and political will.

**The objective** of this research is to assess the efficacy of existing environmental and public health policies, pinpoint their gaps, and suggest innovative strategies for Jordan.

## METHODOLOGY

The research will encompass urban, suburban, and rural communities across multiple regions in Jordan. To account for diversity, a stratified sample of 200 participants was used. Among the respondents, there were 110 women (55%) and 90 men (45%). Age groups: 18–30 years — 40 respondents (20%), 31–45 years — 70 (35%), 46–60 years — 60 (30%), 61+ years — 30 (15%). By sector: government sector — 60 respondents (30%), healthcare — 50 (25%), community organizations — 50 (25%), environmental advocacy — 40 (20%). Such diversity makes the survey representative, reflecting different perspectives and experiences.

The key variables in this study include independent variables such as environmental regulations (air and water quality, waste management), health programs (disease prevention, health education), and community engagement, as well as dependent variables like public health outcomes (respiratory disease rates, access to clean water) and environmental quality indicators (air and water quality indices, pollution levels).

To assess the reliability of the key variables, we performed Cronbach’s Alpha tests for each variable category. The results, summarized in Table 1, show that all Cronbach’s Alpha values exceeded 0.6, confirming the questionnaire’s reliability.

*Table 1: Reliability Analysis of Key Variables*

Variable Category	Cronbach's Alpha
Environmental Policies	0.82
PHP (Public Health Programs)	0.85
Community Engagement Strategies	0.78
Public Health Outcomes	0.88

Environmental Quality Indicators	0.86
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Data was collected from stakeholders in Jordan’s health sector using a mixed-methods approach (surveys and interviews). Quantitative data was gathered through surveys featuring Likert-scale items and multiple-choice questions.

## RESULTS

### EFFECTIVENESS OF JORDANIAN PUBLIC HEALTH PROGRAMS (PHS)

Table 2 summarizes survey results on the effectiveness of Jordanian PHS in addressing environmental challenges. Respondents rated the system as: **Very effective:** 25.0% (n=50); **Effective:** 40.0% (n=80); **Somewhat effective:** 25.0% (n=50); **Not effective:** 10.0% (n=20)

Most respondents (65.0%) view the PHS as effective or very effective, indicating confidence in its ability to handle environmental issues. However, 25.0% see room for improvement, and 10.0% consider it ineffective, highlighting concerns about its coverage and methods. These findings suggest opportunities to enhance PHS effectiveness and build greater public trust.

Table 2: Effectiveness of Jordanian PHS in Responding to Environmental Challenges

Response Category	Frequency	Percentage (%)
Very Effective	50	25.0
Effective	80	40.0
Somewhat Effective	50	25.0
Not Effective	20	10.0

The survey findings on community engagement in Jordan’s policy development reveal that (Table 3): 20% of respondents consider engagement to be high; 50% – moderate; 30% – low. The majority (50%) see room for improvement, while 30% point to insufficient public participation. This indicates that community engagement has improved but still requires further efforts.

Table 3: Perceptions of Jordanian Community Engagement in Policy Development

Engagement Level	Frequency	Percentage (%)
High Community Engagement	40	20.0
Moderate Community Engagement	100	50.0
Low Community Engagement	60	30.0

### IMPACT OF ENVIRONMENTAL POLICIES ON PUBLIC HEALTH

Chi-square and t-tests were used to analyze the effects of key variables. Independent variables (IV) included environmental policies (air/water quality regulations, waste management), public health programs (disease prevention, health education), and community engagement (public participation in policymaking). Dependent variables (DV) covered public health outcomes (respiratory disease rates, access to clean water) and environmental quality (air/water quality indices, pollution levels).

### CHI-SQUARE TEST RESULTS

The Chi-square test results (Table 4) reveal significant associations: **Environmental policies** are linked to **respiratory disease rates** (Chi-Square = 12.34, p = 0.001); **Health education initiatives** improve **access to clean water** (Chi-Square = 8.56, p = 0.003); **Community engagement strategies** influence **air quality indices** (Chi-Square = 5.67, p = 0.017).

Table 4: Chi-Square Test Results for Categorical Variables

IV (Categorical)	DV (Categorical)	Chi-Square	p-value	Significant
Environmental Policies	Rates of Respiratory Diseases	12.34	0.001	Yes
Health Education Initiatives	Access to Clean Water	8.56	0.003	Yes
Community Engagement Strategies	Air Quality Indices	5.67	0.017	Yes

## T-TEST RESULTS

The t-test results reveal significant findings:

- **Stricter air quality regulations** improve **air quality indices** ( $t = 3.45, p = 0.001$ ).
- **Higher water quality standards** enhance **water quality indices** ( $t = 4.12, p = 0.000$ ).
- **Effective waste management policies** reduce **pollution levels** ( $t = -2.76, p = 0.007$ ).
- **Disease prevention programs** lower **respiratory disease rates** ( $t = -3.68, p = 0.002$ ).
- **Greater public participation in policymaking** improves **environmental quality indicators** ( $t = 2.89, p = 0.004$ ).

Both Chi-square and t-test analyses demonstrate significant impacts of environmental policies, public health programs, and community engagement on public health outcomes and environmental quality. These results highlight the critical role of these factors and emphasize the need for sustained investment and focus to improve outcomes.

## QUALITATIVE INSIGHTS

The interviews revealed key themes on integrating environmental and public health policies: **Policy Integration**: Aligning environmental and health policies to address root causes of health issues. **Engagement Barriers**: Lack of awareness, insufficient resources, and limited access to decision-makers hinder community involvement. **Improvement Strategies**: Joint training for health and environmental officials, and platforms for community dialogue.

## DISCUSSION

This study highlights the critical link between environmental policies and public health systems (PHS) during Jordan's ongoing national crisis, exacerbated by epidemiological shifts. Integrated approaches are essential to address complex challenges in Jordan's diverse society. The findings reveal a strong relationship between environmental policies and public health, demonstrating that proactive policymaking can mitigate health risks from environmental degradation. This discussion explores the implications for policymaking, examines barriers to effective integration, and offers actionable recommendations for practitioners.

Stakeholders agree that environmental policies, such as air and water quality regulations, are vital for improving public health. High ratings for these policies underscore their role in reducing respiratory and cardiovascular diseases and overall mortality [8]. Similarly, access to clean water is fundamental to public health, preventing waterborne diseases and enhancing population health outcomes [14].

Despite the potential benefits, Jordan faces challenges in implementing integrated policies. Many stakeholders report moderate to low levels of community engagement in policy development, consistent with literature highlighting the complexity of meaningful involvement [12]. Barriers include limited awareness, resources, and access to decision-makers, hindering full community participation.

Additionally, the disconnect between environmental and public health sectors in Jordan and globally remains a significant issue. Policies are often developed in isolation, with minimal collaboration between agencies. This lack of synergy limits the impact of initiatives, as resources are not effectively aligned. For example, while environmental regulations improve air quality, public health programs (PHP) often focus narrowly on disease control without addressing broader environmental health drivers.

## CONCLUSIONS AND RECOMMENDATIONS

This study underscores the critical link between environmental and public health, using Jordan as a case study. It highlights the importance of integrated policies for building resilient communities. The findings

reveal that stakeholders recognize the impact of environmental regulations, particularly on air and water quality, on public health. However, challenges such as limited community engagement and poor interagency coordination hinder effective implementation.

To fully harness the potential of integrated policies, it is essential to address these barriers and strengthen collaboration between sectors. By doing so, we can better protect public health from the growing burden of environmental threats.

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