

From Climate Risk Perception to Regenerative Tourism Intention: The Roles of Environmental Awareness, Knowledge, Concern, and Destination Image in Predicting Tourist Satisfaction

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ABSTRACT

This study examines how climate change risk perception (CCRP) influences regenerative tourism intention (RTI) and tourist satisfaction in Pakistan's eco-sensitive destinations. Drawing on Protection Motivation Theory, the study investigates environmental awareness, environmental knowledge, and environmental concern as psychological mechanisms linking CCRP with RTI. A cross-sectional survey was conducted among 224 domestic and international tourists visiting Murree, Nathia Gali, Hunza, Gilgit, and Kashmir. Data were analyzed using PLS-SEM. Findings reveal that CCRP positively predicts environmental awareness, knowledge, and concern, all of which significantly enhance RTI. RTI further positively predicts tourist satisfaction. Destination image significantly strengthens the positive relationship between RTI and tourist satisfaction. The study extends regenerative tourism literature by demonstrating how climate-related threat perceptions trigger cognitive and affective responses that encourage restorative tourism behavior. Practically, the findings suggest destination managers should invest in climate-risk communication, conservation engagement programs, and destination image enhancement to improve both sustainability outcomes and tourist experiences.



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1. Introduction

Tourism is one of the largest and most important economic and social sectors worldwide contributing to employment, cultural exchange, regional development and economic growth (Rauf, de Oliveira Menezes, & Jawaid, 2024). Climate change, however, is one of the most pressing problems affecting the environment in the twenty first century and tourism destinations are under threat of its sustainability (Ali et al., 2024). Global warming and changes in precipitation, biodiversity loss, coastal erosion, extreme weather events and ecosystem degradation are making tourist destinations more or less attractive and viable (Amin et al., 2025; Shah et al., 2024). Consequently, climate change is a significant issue for tourists, destination managers, policy makers and environmental stakeholders (Zaheer & Bano, 2024). Due to increasing awareness about environmental concerns, tourists' expectations and preferences have changed, leading to a growing focus on sustainability and environmental responsibility in travel experiences (Hui et al., 2023). As a response to this, the notion of regenerative tourism has become more and more academic focus as it is not

only sustainable, but it is also concerned with restoration, renewal and positive impact on environmental and community wellbeing (Ashraf et al., 2024). As a result, the issue of how tourists' perception of climate related risks affects their environmental attitudes, behavioral intentions and satisfaction has become an important one within the scope of contemporary tourism research.

Previous empirical research has thoroughly investigated the effects of climate change perceptions on different tourism-related outcomes such as destination choice, tourist behavior, environmental attitudes, and TS (Rehan et al., 2024). Past studies have indicated that tourists' perceptions of risk in climate change are positively associated with their environmental awareness and concern for sustainability issues, as well as their willingness to engage in sustainable tourism practices (Rehan et al., 2024; Zaman, 2024; Zulfaqar et al., 2023). However, environmental knowledge and environmental concern are also pointed out as key indicators that can explain pro environmental intentions and sustainable consumption in various tourism contexts (Gulzar et al., 2024). There have also been positive links found between environmental responsibility intentions and tourism outcomes like destination loyalty, revisit intentions and satisfaction (Raza et al., 2024). Moreover, destination image has been considered as one of the key factors affecting tourists' evaluations and behavioral responses since positive attitudes toward a destination can lead to positive expectations, experiences, and post visit satisfaction (Arismayanti, Andiani, & Kusyanda, 2024). It is from these studies that it is possible to conclude that the perception and attitude toward the environment influence tourism behavior and tourism experiences, especially if they are perceived together.

The concept of regenerative tourism is different from sustainable tourism, ecotourism, and responsible tourism. The main principle of sustainable tourism is the reduction of environmental and socio-cultural damage and the preservation of the existing balance (Rehan et al., 2024). Ecotourism is based on the concept of focusing on natural environment based tourism with the elements of conservation and education, and responsible tourism is the concept of ethical behaviour of tourists and minimizing the impact of tourists on the environment (Raza et al., 2024). Unlike harm-reduction and sustainability tourism, regenerative tourism aims to actively improve conditions in the ecosystem, enhance community's capacity to adapt and shift, and leave the destination better off than before the tourists arrived (Zaheer & Bano, 2024). This restorative orientation makes regenerative tourism a more transformative tourism paradigm, which is more relevant to the climate-vulnerable destinations including Northern Pakistan. While there is an increasing amount of literature, there are still several significant gaps in research. First, there is a relative lack of focus on RTI as a unique and growing tourism phenomenon (Shakeela & Jose, 2025) despite the focus on sustainable tourism behaviors, ecofriendly consumption and environmentally responsible travel practices. Regenerative tourism has recently become a hot topic in academic and professional research, but empirical studies examining the antecedents of this concept are still limited. However, the role of CCRP in the formation of RTIs via environmental awareness, environmental knowledge, and environmental concern is largely unknown (Ali et al., 2024). These factors have been looked at in isolation instead of being analysed in a unified model that explains the psychological mechanisms leading to a change in the regenerative tourism behavior stemming from climate related perceptions (Sassi, Ali, & Ali, 2025). Therefore, there is a need for empirical models considering these simultaneous and interrelated cognitive and affective mechanisms.

Another relevant lack is the correlation between the intention to practice regenerative tourism and tourists' satisfaction and the factors that can affect this correlation. Although previous studies have demonstrated that generating tourism behaviours can lead to a better tourist experience, there is not yet sufficient empirical research on whether RTIs directly affect TS or when it is more likely to be significant (Ergun, Karadeniz, & Rivas, 2024; Muzamil et al., 2024). Secondly, destination image has been extensively investigated as an explicit predictor of satisfaction, loyalty and revisit intentions; but its moderating position in the context of regenerative tourism has not been fully investigated (Subhani et al., 2025). TS is assessed based on their values as well as the nature of their destination, so that destination image could be an important boundary condition that can enhance or hinder the effect of RTIs on satisfaction (Shakeela & Jose, 2025). These gaps are significant to the development of theory, and have been identified as having practical relevance in the context of growing

environmental uncertainty and sustainability concerns in destination management in today's world.

Given these deficits, the present study has several important research goals. In particular, the study would focus on the impact of CCRP on the environmental awareness, environmental knowledge and environmental concern of tourists. It also aims to explore the impact of environmental awareness, environmental knowledge and environmental concern on the intention to engage in regenerative tourism. Besides, the study seeks to analyse the relationship between the intention to practice regenerative tourism and TS. Finally, the study explores the moderating effect of destination image on the relationship between the intention to engage in regenerative tourism and TS. The novelty of this study is that it brings together the key concepts of CCRP, environmental cognition, environmental emotions, RTI, destination image and TS in one comprehensive framework, which are very important for the fields of tourism and environmental sustainability. The results can serve as interesting information to all tourism practitioners, destination managers, policy makers, and also sustainability supporters who aim to promote responsible tourism practices and improve tourist experience and competitiveness.

Protection Motivation Theory is the major theory used in this study to explain how people react to threats by making a cognitive appraisal and by engaging in adaptive behaviors (Rogers, 1975). The theory suggests that awareness, knowledge, and concern are responses to the perceived threat and then affect the intention to act to mitigate or to respond to that threat. Based on the tourism case, tourists should be expected to show higher level of environmental awareness, environmental knowledge, and environmental concern, which will result in a higher intention to engage in regenerative tourism activities when the climate related risks are higher. These intentions are further expected to improve tourists' satisfaction, through the creation of meaningful and value congruent travel experiences. Additionally, the model acknowledges the influence of contextual factors, with a positive destination image enhancing the positive effects of the RTIs. Accordingly, the present study develops and empirically tests a comprehensive framework that explains how CCRP shapes tourists' cognitive, emotional, and behavioral responses and ultimately influences TS through RTIs and destination image (Alam & Aqel, 2025; Wara, Jan, & Latif, 2023).

2. Literature Review

2.1. Climate Change Risk Perception and Environmental Awareness

Perception of climate change risk is the expectation of negative impacts from changes in the climate's environment (Aziz, Roaf, & Hussain, 2025). It indicates the level of awareness of climate change as a threat to natural ecosystems, human health and wellbeing and socioeconomic activities (Ergun, Karadeniz, & Rivas, 2024). Environmental awareness, on the other hand, is the awareness, concern and consciousness of individuals about the environment and its impact on the current and future generation (Khan et al., 2025). It includes awareness of environmental issues, understanding of ecological sustainability and care for the environment (Raza, Khan, & Qamar, 2024). Research suggests that when people feel a sense of threat in the environment that is personally relevant and likely to have a negative impact, awareness is often raised (Pervaiz et al., 2025). Based on the risk perception theory, individuals who have higher perception of environmental risk will attend to environmental information and be more aware of environmental issues that impact society (Zaman, 2024). Previous empirical studies have consistently reported a positive relationship between climate related risk perceptions and environmental awareness (Muzamil et al., 2024). Studies have found that those who see climate change as a serious environmental threat have more concern for ecological issues and have a higher level of awareness about measures to protect the environment (Farooq et al., 2024; Nasir et al., 2025; Ullah et al., 2024). Research has shown that across various populations, perceived environmental threats have been shown to increase people's desire to seek out information, to become part of an environmental discussion, and to pay attention to the environmental impacts (Wang et al., 2025). In a tourism context, tourists who are aware of how climate change can affect the tourism destination are more likely to be mindful of environmental degradation and sustainability issues.

H1: CCRP has a significant positive effect on environmental awareness.

2.2. Climate Change Risk Perception and Environmental Knowledge

Environmental knowledge encompasses what an individual knows about environmental issues, ecological processes, ecological protection and the causes and effects of environmental problems (Wang et al., 2025). It includes factual information, scientific knowledge and awareness of actions that support environmental sustainability (Zaheer & Bano, 2024). Knowledge is regarded as one of the cognitive resources essential for people to make informed decisions on environmental problems (Zulfaqar et al., 2023). The importance of CCRP is related to the ability to induce information-seeking behavior as well because people who feel threatened by climate change are likely to seek more information about the causes of change, its impacts and potential solutions (Zaheer & Bano, 2024). The more people perceive climate change as a major threat, the more the messages they receive in the media, at school, in government campaigns, and through social networks are likely to be noticed (Wang et al., 2025). Empirical studies have shown that risk perception is an important indicator of environmental learning and knowledge, and the acquisition of this knowledge (Nasir et al., 2025). Research studies on environmental behavior have identified that the people who feel higher risk from the surroundings are likely to have better knowledge of climate change, environmental degradation, and environmental sustainability issues (Ullah et al., 2024). It has been proposed that perceived threat motivates people to search for information, collect knowledge and learn about environmental issues (Farooq et al., 2024). It can be inferred from the tourism and environmental psychology literature that tourists who are worried about environmental risks tend to exhibit greater knowledge of environmental conservation, protection of the ecosystem and sustainable tourism practices.

H2: CCRP has a significant positive effect on environmental knowledge.

Environmental concern is the extent of worry about environmental issues and the impact they can have on ecosystems, society and future generations (Aziz, Roaf, & Hussain, 2025). It captures how emotionally attached individuals are to the environment and how significant they consider it to be to protect the environment and ensure its sustainability (Amin et al., 2025). While environmental awareness is focused on being able to recognize and understand environmental issues, environmental concern centers on emotional responses of concern, worry, responsibility, and care for the wellbeing of the environment (Shah et al., 2024). CCRP has been classified as being an important antecedent to environmental concern as people are more likely to be emotionally involved when they see the threat and consequences of climate change (Ashraf et al., 2024). Earlier studies have consistently found that people who feel there are higher risks in their environment show higher environmental concern (Hui et al., 2023). The findings from past studies in environmental psychology and sustainability-related studies have shown that people's climate-related threat perceptions have a significant effect on their environmental degradation and ecological protection concerns (Baloch et al., 2023). People who know the alarming reality of climate change tend to express more concern about environmental quality and more responsibility for the conservation of the environment (Rehan et al., 2024). Studies on tourists have also discovered that tourists' perceptions of environmental vulnerability are linked with heightened concern for destination sustainability and conservation actions.

H3: CCRP has a significant positive effect on environmental concern.

2.3. Environmental Awareness and Regenerative Tourism Intention

RTI is a person's desire to participate in tourism activities that are designed to restore, improve and sustain destinations, communities and ecosystems over the long-term (Tran, 2025). While sustainable tourism is more about reducing the impacts, regenerative tourism is about making a positive difference in the environmental and social conditions of the destination, making it better than it was (Rahman et al., 2024). Environmental awareness is one of the important cognitive foundations for intention to engage in regenerative tourism, as it helps people understand the significance of responsible tourism practices (Hui et al., 2023). Environmental awareness is about knowing about environmental problems, recognising the implications and valuing the importance of protecting the environment (Yeoman, 2024). Empirical research to date has revealed that environmental awareness is a

key determinant of pro environmental attitudes and environmentally responsible behavioral intentions (Yeoman, 2024). Studies in the area of tourism and environmental management suggest that people who are more aware of environmental problems are more likely to support sustainable tourism, engage in conservation and to choose ecologically responsible tourism options (Alhitmi, Rahman, & Bayram, 2024; Hussain, 2025; Zaman, 2024). Other studies have also shown that awareness can improve the awareness of the consequences of tourism activities, and can encourage the adoption of positive behaviors towards environmental protection.

H4: Environmental awareness has a significant positive effect on RTI.

2.4. Environmental Knowledge and Regenerative Tourism Intention

Environmental knowledge is defined as the person's understanding of environmental systems, environmental processes, environmental problems and sustainable practices which help protect the environment (Singh et al., 2024). It contains factual information on environmental challenges and knowledge of actions which can help to mitigate environmental degradation and promote sustainability (Iddawala & Lee, 2026). Environmental knowledge is viewed as an essential factor in responsible decision making, as it would help an individual to consider the environmental impacts of their actions and choose a suitable approach to solving environmental issues (Corral-Gonzalez, Cavazos-Arroyo, & García-Mestanza, 2023). Environmental tourists are more likely to be aware of the effects of tourism activities on the local environment and communities when tourism is discussed. Previous empirical studies have consistently shown associations between environmental knowledge and pro-environments attitudes, intentions and sustainable consumption behaviours (Alhitmi, Rahman, & Bayram, 2024). Research has revealed that people who have more knowledge about the environment are more likely to have environmentally responsible attitudes and behaviors and to support sustainability-oriented initiatives (Zulfaqar et al., 2023). In the field of tourism research, environmental knowledge has been posited as an important determinant of sustainable tourism behaviors, conservation involvement, and conservation receptivity to environmentally friendly tourism services (Hui et al., 2023). Scholars argue that knowledge increases individuals' confidence in making environmentally responsible decisions and strengthens their ability to evaluate the benefits of sustainability focused practices.

H5: Environmental knowledge has a significant positive effect on RTI.

2.5. Environmental Concern and Regenerative Tourism Intention

Environmental concern is the level of concern about environmental issues and the personal and societal importance of protecting the environment (Gulzar et al., 2024). It is a person's emotional connection to the environment's health and their concern about environmental damage, pollution, climate change and ecology sustainability (Khan et al., 2025). Environmental concern is seen as a motivational factor that underlies environmentally responsible behaviour as people who are truly concerned about environmental issues will be more likely to support actions that benefit the environment and environmental degradation (Raza, Khan, & Qamar, 2024). Environmental concern affects tourists' perceptions of the environmental impacts of tourism and is also associated with their attitudes towards sustainable tourism (Pervaiz et al., 2025). There is a substantial body of literature to support that environmental concern is an important predictor of pro environmental intentions and behaviours. Past research has found that people's environmental concern is positively associated with conservation behaviors, expressing their attitudes to environmental policies, having sustainable consumption habits, and engaging in environmentally responsible behaviors (Ashraf et al., 2024; Baloch et al., 2023; Rehan et al., 2024). This has also been highlighted by tourism research which shows that the tourist who cares about the environment is more inclined to select an environmentally friendly tourist destination, favor ecofriendly accommodation and undertake the activities that have a low environmental impact (HAROON, 2024). The literature suggests that concern is a motivational mechanism which motivates people to turn environmental values into intentions to act.

H6: Environmental concern has a significant positive effect on RTI.

2.6. Regenerative Tourism Intention and Tourist Satisfaction

TS is the general assessment of a tourism experience in relation to the satisfaction of the tourist with the experience (Munawar Khan et al., 2025). Because happy tourist is more likely to return to the tourism destinations, to recommend them to others, and to have positive attitudes towards tourism providers, it is an important outcome in tourism research (Zeeshan et al., 2025). The evaluation of tourism experiences has become increasingly complex in recent years, encompassing not only service quality and attributes of destinations, but also the positive environmental and social impacts of tourism (Udden Babar et al., 2025). RTI is the tourist's readiness to engage in tourism activities that will make a positive impact on the environment, local communities and destination resilience (Arismayanti, Andiani, & Kusyanda, 2024). Empirical research has already shown the positive association between tourists' participation in eco-friendly and sustainable tourism and the overall tourists' satisfaction (Batool et al., 2025). Studies indicate that tourists enjoy their travel experience more and gain psychological benefits when they believe that their travel impacts are positive for environmental stewardship and community development (Rauf, de Oliveira Menezes, & Jawaid, 2024; Shakeela & Jose, 2025). Research on sustainable tourism behaviours has shown that when tourists' activities align with their values and ethical principles, their satisfaction is likely to increase (Wara, Jan, & Latif, 2023). In addition, there has been a suggestion that if tourists' values match those of the practices of the place they are visiting, then their evaluations of the experience will be enhanced.

H7: RTI has a significant positive effect on TS

2.7. Destination Image as Moderator

The overall constellation of beliefs, impressions, perceptions, and emotional evaluations held by tourists about a specific tourism destination is known as destination image (Sattar & Sfodera, 2026). It is a product of many sources of information, personal experiences, marketing communications, social interactions and media exposure (Abbas et al., 2024). It is well established that destination image is a very important determinant in tourist attitudes, expectations, behavioural intentions and satisfaction (Alam & Aqel, 2025). Positive destination image includes positive attitudes towards environmental quality, attractiveness, safety, infrastructure, hospitality and overall destination appeal (Ahmed, 2025). Destination image is very significant in the context of regenerative tourism, as tourists are increasingly concerned about the environmental responsibility and commitment to sustainability (Zulfiqar et al., 2024). The importance of destination image in influencing tourists' experience and satisfaction has been seen in the past studies. Favorable destination images consistently have been shown to improve tourists' perception of service quality, boost emotional attachment to destinations, and bolster satisfaction (Rauf, de Oliveira Menezes, & Jawaid, 2024). Studies on sustainable tourism have also indicated that these positive perceptions of the destination amplify the impact of sustainable attitudes and behaviors on sustainable tourism outcomes.

H8: Destination image significantly moderates the relationship between RTI and TS

2.8. Theoretical Framework Supporting the Research

Protection Motivation Theory (PMT) is an explanation of how people react to threats that they perceive, which are appraised by threat appraisal and coping appraisal. In this study, climate change risk perception is defined as the threat appraisal dimension, which deals with tourists' assessment of climate change-related severity and vulnerability of destinations. Environmental awareness and environmental knowledge are cognitive coping responses, in that tourists want to know and gain awareness of environmental degradation and mitigation. Environmental concern is an affective coping response that includes worry, responsibilities and emotional involvement with ecological preservation. The overall cognitive and emotional responses foster protective behavioural intentions (as measured in this study as regenerative tourism intention). In this sense, PMT offers an excellent theoretical foundation for understanding the link between climate risks and restorative tourism behaviors. The present study builds on Protection Motivation Theory (PMT) proposed by (Rogers, 1975) which takes into consideration the way people react to perceived threats,

creating cognitive, emotional, and behavioral responses to mitigate potential threats. PMT teaches that when a threat is perceived as serious and personally relevant, people undergo cognitive appraisal processes that impact their level of awareness, understanding, concern, and behavior. From the perspective of climate change and tourism, climate change perception might increase the awareness of environment problems, environmental knowledge and environmental concern of tourists about natural resources and tourism destinations protection. The cognitive and affective reactions in turn trigger the adoption of protective and environmentally responsible attitudes and behaviours (Ashraf et al., 2024). RTI can thus be seen as a protective behavioral response as a result of increased environmental awareness, knowledge and concern. In addition, PMT indicates that the intention to protect can show good intentions and consequently good outcomes of behavior and evaluation, hence, confirming the relationship between the intention to protect regenerative tourism and TS. The theory also recognizes the role of situational factors that could facilitate or impede behavioral outcomes. This study indicates that destination image is one of the important contextual conditions that mediate the positive relationship of the concept of RTI with TS. Regenerative tourists with positive perceptions of the destination are likely to be more satisfied, since a positive destination perception leads to positive reinforcement of the effectiveness and meaningfulness of their environment-friendly behavior. Thus, Protection Motivation Theory offers the overall theoretical basis for the direct, indirect and moderating relationships hypothesized in this study and depicted in Figure 1: Conceptual Framework.

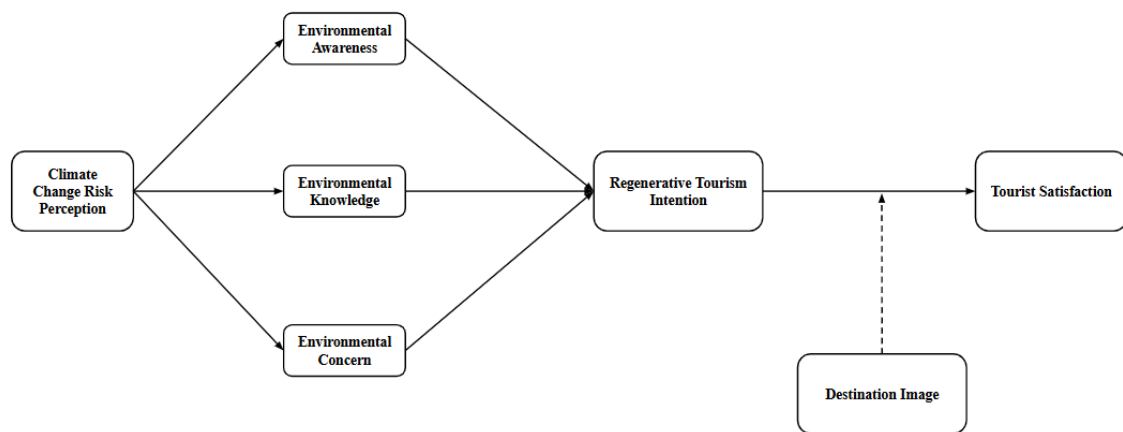


Figure 1: Conceptual Framework

3. Methodology

In this present study, a quantitative research approach was used to look at the relationship between the CCRP, environmental awareness, environmental knowledge, environmental concern, RTI, destination image and TS. A cross-sectional survey design was used as it enables the researcher to obtain data from a large sample of respondents at one time and is frequently employed in tourism and behaviour research to test theoretical models and hypothesized relationships. This study was deductive in nature with the purpose of testing the conceptual framework proposed based on Protection Motivation Theory (PMT) on an empirical basis. Structured questionnaire with previously validated measurement scales obtained from literature was used for data collection. The target population included domestic and foreign tourists visiting environmentally sensitive and ecologically important areas in Pakistan like Murree, Nathia Gali, Hunza, Gilgit and Kashmir. These places were chosen as the most visited tourist sites in Pakistan, and are more prone to environmental changes caused by climate changes which include glacier retreat, loss of biodiversity, weather changes, deforestation and degradation of ecosystems. Thus, tourists visiting these places were deemed as suitable respondents to explore the perceptions of climate change risks and intentions of regenerative tourism.

The respondents were selected through purposive sampling method to ensure that those recruited had the following inclusion criteria: age ≥ 18 years, domestic or international tourist visiting one of the five selected destinations, and minimum stay of one day at the destination. Physical surveys were conducted at key tourist sites like hotels, viewpoints, and

transportation centers, and electronic surveys were carried out via online communities and social media sites for tourism. In order to have better representation of destination, data collection quotas were kept in four different areas (Murree, Nathia Gali, Hunza, Gilgit & Kashmir) to avoid over representation of any one destination. The sample size was determined by the 10-times rule and with statistical power analysis. In line with Hair et al. (2022) the minimum number of cases needed is the maximum number of structural paths pointing to any endogenous construct multiplied by 10. Three direct predictor(s) was the minimum number of observations required for RTI. Furthermore, the calculation of the minimum sample using G*Power analysis with medium effect size ($f^2 = 0.15$), with 0.80 as the power and $\alpha = 0.05$ showed that the minimum sample was below 200. Thus, the last sample of 224 was deemed to be statistically adequate. Data were gathered by using self-administered questionnaires that were distributed physically and electronically in the tourism sites and in the online communities related to tourism. A total of 250 questionnaires were passed around to the prospective respondents. A total of 224 questionnaires were used for final analysis, after screening out missing data, incomplete or inconsistent responses, which was deemed adequate for multivariate statistical analysis. Sample size of 224 was considered adequate for the partial least squares structural equation modeling as suggested by the recommendations for using partial least squares structural equation modeling with an appropriate sample size is adequate to estimate complex structural relationships between latent constructs. Variance Inflation Factor (VIF) was used to determine collinearity. VIF values were all within a range of 1.42 to 3.11, which were below the conservative threshold of 5.0, which meant that there was no evidence of multicollinearity among predictor constructs.

There were 2 sections of the questionnaire. Demographic details such as age, sex, education, nationality, frequency of travel and destination visited were collected in the first section of the study. The second section contained the measures of the study variables. The intention to engage in regenerative tourism was assessed by a 5 item scale adapted from Rehman, Abbas, Abbasi, & Khan, (2023). The score of CCRP was calculated by using an 8 item scale adapted from Van Valkengoed, Steg, & Perlaviciute, (2021). Environmental awareness was assessed by a 7 item scale adapted from Susongko & Afrizal, (2018). Environmental knowledge was measured with a 7-item scale created by DeChano, (2006). The measurement of the concern for the environment was based on an 8 item scale, adapted from Diekmann & Preisendörfer, (2003). Mohamad, Abdullah, & Mokhlis, (2012) adopted the 4-item satisfaction scale to assess the tourist's satisfaction. The instrument for measuring destination image was scale adapted from Mohamad, Abdullah, & Mokhlis, (2012) which consisted of 6 items. Content validity and construct reliability were established by using all measurement items from previous empirical studies. Answers were given on a 5-point Likert scale from strongly disagree (1) to strongly agree (5); higher scores representing greater agreement with the statements.

Table 1
Measurement of Variables

Construct	Items	Source	Sample Item
CCRP	8	Van Valkengoed et al. (2021)	Climate change threatens tourism destinations
EA	7	Susongko & Afrizal (2018)	I am aware of environmental degradation
EK	7	DeChano (2006)	I understand climate-related ecological impacts
EC	8	Diekmann & Preisendörfer (2003)	I feel worried about environmental damage
RTI	5	Rehman et al. (2023)	I intend to engage in restorative tourism activities
DI	6	Mohamad et al. (2012)	This destination has a positive environmental image
TS	4	Mohamad et al. (2012)	I am satisfied with my visit

The data was analyzed with the Software SmartPLS widely used for partial least squares structural equation modeling (PLS-SEM). The reasons for choosing SmartPLS were its appropriateness for predictive research model, for the development of a theory, complex structural relations, and studies involving multiple latent variables and moderating effects. This analysis was done in two phases. The reliability and validity of the constructs were first examined in the measurement model. Internal consistency reliability was analysed by the

Cronbach's alpha and composite reliability values, and convergent validity was analysed by the average variance extracted and factor loadings. The discriminant validity was assessed using the Fornell-Larcker criterion and heterotrait-monotrait ratio. The second stage involved evaluating the structural model to test the relationships between the study variables as hypothesized. The bootstrapping procedure was used for examining the path coefficients, t values, p values, coefficient of determination values, and effect sizes. Furthermore, the moderation of the relationship between the intention for regenerative tourism and the TS by destination image was tested by using the approach of interaction terms in SmartPLS. The findings derived from the structural model were used to test the proposed relationships and to validate the conceptual model that was developed for the study.

4. Results

Demographic information of the 224 respondents who participated in the study is summarized in Table 2. The results showed that most of the respondents (58.9%, $n = 132$) were male and the rest (41.1%, $n = 92$) were female. Regarding age, most respondents belonged to the 26–35 years category (39.7%, $n = 89$), followed by those aged 18–25 years (31.7%, $n = 71$). Females aged 36–45 years made up 19.2% ($n=43$) and those over 45 made up 9.4% ($n=21$) of the sample. Regarding educational attainment, almost half of the respondents had a bachelor's degree (45.5%, $n = 102$), and 33.9% ($n = 76$) had a master's degree. The percentage of respondents with intermediate education was 12.9% ($n=29$) while that of MPhil and PhD only accounted for 7.7% ($n=17$). Domestic tourists accounted for 78.6% ($n = 176$) of the tourists while international tourists accounted for 21.4% ($n = 48$) of the tourists. Concerning destinations visited, Murree attracted the highest proportion of tourists (25.9%, $n = 58$), followed by Hunza (22.8%, $n = 51$), Kashmir (18.7%, $n = 42$), Nathia Gali (17.4%, $n = 39$), and Gilgit (15.2%, $n = 34$). Overall, the demographic profile revealed that the study sample consisted of mainly educated young and middle age domestic tourists visiting the prominent eco-sensitive destinations of Pakistan.

Table 2
Demographic Profile of Respondents

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	132	58.9
	Female	92	41.1
Age	18–25 Years	71	31.7
	26–35 Years	89	39.7
	36–45 Years	43	19.2
	Above 45 Years	21	9.4
	Intermediate	29	12.9
Education	Bachelor's Degree	102	45.5
	Master's Degree	76	33.9
	MPhil/PhD	17	7.7
	Domestic Tourist	176	78.6
Tourist Type	International Tourist	48	21.4
	Murree	58	25.9
Destination Visited	Nathia Gali	39	17.4
	Hunza	51	22.8
	Gilgit	34	15.2
	Kashmir	42	18.7

Table 3 shows the results of the measurement model assessment consisting of outer loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE). The results show that the loadings of the items are all above the minimum acceptable value of 0.60 and they have values ranging from 0.659 to 0.890 which confirms satisfactory indicator reliability. The Cronbach's alpha reliability ranged from 0.843 to 0.913, which is higher than 0.70, and revealed that constructs have high internal consistency reliability. Likewise, composite reliability was in the .894 to .932 range, which is considered very good reliability for each construct. In addition, the AVE for the items ranged from 0.594 to 0.700, and all items were above the minimum criteria of 0.50, which confirmed good convergent validity. The highest AVE value was observed for the construct of RTI (AVE = 0.700) showing high explanatory power of the indicators in this construct, while the lowest AVE value was found for the construct of environmental knowledge (AVE = 0.594) which was still above the acceptable level. A few indicators had borderline loadings (0.65–0.70), but they were kept

because the composite reliability and AVE scores were still above the recommended thresholds and the items were related to the theoretical content of the scales. Overall, these findings indicate that the scales have acceptable levels of reliability and convergent validity, which gives confidence that the constructs were appropriate for further analysis of the structural model.

Table 3
Construct Reliability and Convergent Validity

Variable	Item	Outer Loadings	Cronbach's Alpha	CR	AVE
Climate Change Risk Perception	CCRP1	0.736	0.904	0.923	0.600
	CCRP2	0.776			
	CCRP3	0.771			
	CCRP4	0.837			
	CCRP5	0.833			
	CCRP6	0.820			
	CCRP7	0.691			
	CCRP8	0.720			
Destination Image	DI1	0.802	0.912	0.932	0.696
	DI2	0.860			
	DI3	0.864			
	DI4	0.796			
	DI5	0.835			
	DI6	0.845			
Environmental Awareness	EA1	0.659	0.886	0.911	0.595
	EA2	0.734			
	EA3	0.694			
	EA4	0.793			
	EA5	0.834			
	EA6	0.829			
	EA7	0.834			
Environmental Concern	EC1	0.841	0.913	0.930	0.623
	EC2	0.771			
	EC3	0.849			
	EC4	0.812			
	EC5	0.797			
	EC6	0.773			
	EC7	0.715			
	EC8	0.747			
Environmental Knowledge	EK1	0.809	0.886	0.911	0.594
	EK2	0.782			
	EK3	0.773			
	EK4	0.781			
	EK5	0.797			
	EK6	0.726			
	EK7	0.722			
Regenerative Tourism Intention	RT1	0.869	0.892	0.921	0.700
	RT2	0.842			
	RT3	0.890			
	RT4	0.824			
	RT5	0.750			
Tourist Satisfaction	TS1	0.861	0.843	0.894	0.681
	TS2	0.666			
	TS3	0.875			
	TS4	0.880			

Table 4 shows the results of the heterotrait-monotrait ratio (HTMT) assessment. The average HTMT values of all constructs were between 0.488 and 0.841. Discriminant validity is established with values of HTMT less than 0.90 (as per guidelines). The highest HTMT value was found for the relationship between environmental awareness and environmental knowledge (0.841), then between environmental knowledge and environmental concern (0.834) which are still below the recommended value. Likewise, the relationships between TS with the environment, environmental awareness, and destination image were found to be acceptable for HTMT. All HTMT scores were less than the critical value, 0.90, and therefore the results do support the separating of each construct from the others while providing the construct with a unique conceptual domain. Thus, discriminant validity was confirmed as the constructs used in this study did not have any multicollinearity and conceptual overlap.

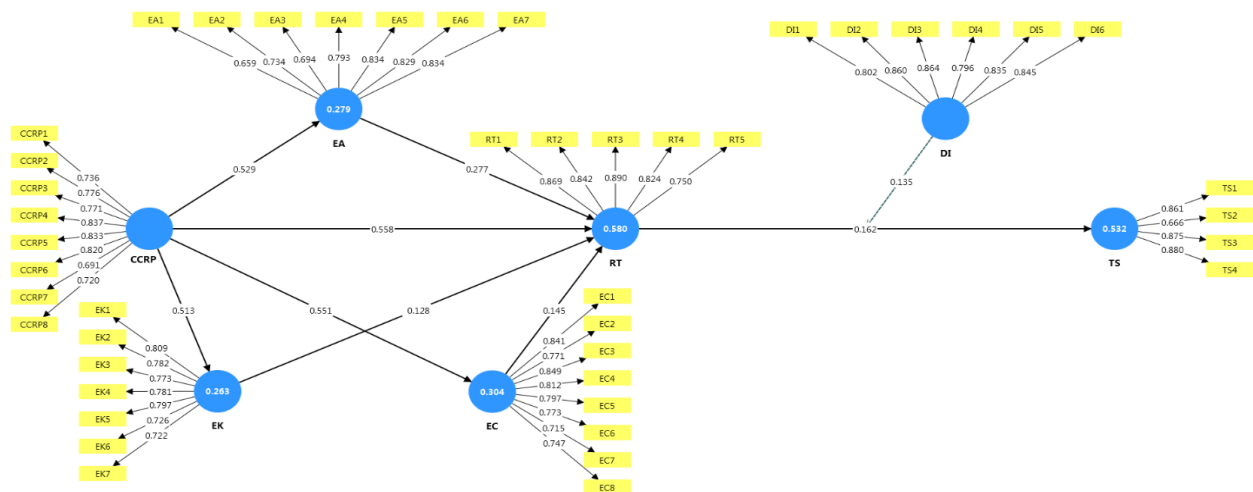


Figure 2: Measurement Model

Table 4
Discriminant Validity (HTMT Ratio)

	CCRP	DI	EA	EC	EK	RT	TS
Climate Change Risk Perception							
Destination Image	0.488						
Environmental Awareness	0.573	0.736					
Environmental Concern	0.595	0.661	0.800				
Environmental Knowledge	0.559	0.546	0.841	0.834			
Regenerative Tourism Intention	0.792	0.632	0.647	0.604	0.533		
Tourist Satisfaction	0.551	0.759	0.767	0.796	0.624	0.609	

The results of the quality assessment of the structural model are shown in Table 5, where the coefficient of determination (R^2), the adjusted coefficient of determination (R^2_{adj}), predictive relevance ($Q^2_{predict}$), root mean square error (RMSE), mean absolute error (MAE), and standardized root mean square residual (SRMR) are presented. The results show that the variance of environmental awareness was 27.9%, environmental knowledge was 26.3%, and environmental concern was 30.4% of the variance. In addition, environmental awareness, environmental knowledge and environmental concern together explained 58.0% of the variance in RTI which is significant. Likewise, the intention to have regenerative tourism and the image related to it explained 53.2% of the variance in TS. All $Q^2_{predict}$ values were positive (0.250 to 0.525), and the models showed good predictive relevance. The RMSE values varied from 0.694 to 0.870 and MAE values varied from 0.502 to 0.688, demonstrating good prediction accuracy. In addition, the SRMR value was 0.061, which is less than the recommended value of 0.08, indicating a good overall model fit. Thus, the results indicate that the suggested model has good explanatory and predicting power.

Table 5
Model Quality Assessment

Endogenous Construct	R^2	$R^2_{adjusted}$	$Q^2_{predict}$	RMSE	MAE	SRMR
Environmental Awareness	0.279	0.278	0.267	0.861	0.668	0.061
Environmental Knowledge	0.263	0.262	0.250	0.870	0.688	
Environmental Concern	0.304	0.302	0.292	0.846	0.653	
Regenerative Tourism Intention	0.580	0.577	0.513	0.703	0.502	
Tourist Satisfaction	0.532	0.530	0.525	0.694	0.522	

Table 6 shows the results of hypothesis testing performed using SmartPLS bootstrapping procedure. The results indicate that all hypothesized relationships were significant and confirmed. CCRP significantly correlated with environmental awareness ($\beta = 0.529$, $t = 11.112$, $p < 0.001$), thus supporting H1. Likewise, for environmental knowledge, CCRP (H2) had a significant positive effect ($\beta = 0.513$, $t = 9.775$, $p < 0.001$), and for environmental concern, CCRP (H3) had a significant positive effect ($\beta = 0.551$, $t = 10.519$, $p < 0.001$). The findings also confirmed that the environmental awareness had significant influence on RTI ($\beta = 0.277$, $t = 5.481$, $p < 0.001$), which is in line with H4. The environmental knowledge had a positive significant relationship with the RTI (H5) ($\beta = 0.128$, $t = 2.639$, p

= 0.004), and the environmental concern had a positive significant relationship with the RTI (H6) ($\beta = 0.145$, $t = 2.650$, $p = 0.004$). Besides, the intention to engage in regenerative tourism had significant impacts on TS ($\beta = 0.162$, $t = 3.941$, $p < 0.001$) which supported H7.

Finally, the interaction effect between destination image and RTI on TS was significant ($\beta = 0.135$, $t = 5.583$, $p < 0.001$), which supported H8, indicating that, in the study, destination image moderates the impact of TS and supports H8. Overall, the results provide evidence that supports the developed conceptual framework and show that the CCRP has multiple environmental effects on RTI and TS. Simple slope analysis (Figure 4) showed that the positive relationship between RTI and tourist satisfaction was stronger when DST was high and weaker when DST was low. Positive destination perception enhances the satisfaction gains from RTI, which suggests that this positive perception and satisfaction can boost into a higher level.

Table 6
Path Analysis Results

Hypothesis	Relationship	β	t-value	p-value	Decision
H1	CCRP -> EA	0.529	11.112	0.000	Supported
H2	CCRP -> EK	0.513	9.775	0.000	Supported
H3	CCRP -> EC	0.551	10.519	0.000	Supported
H4	EA -> RT	0.277	5.481	0.000	Supported
H5	EK -> RT	0.128	2.639	0.004	Supported
H6	EC -> RT	0.145	2.650	0.004	Supported
H7	RT -> TS	0.162	3.941	0.000	Supported
H8	DI x RT -> TS	0.135	5.583	0.000	Supported

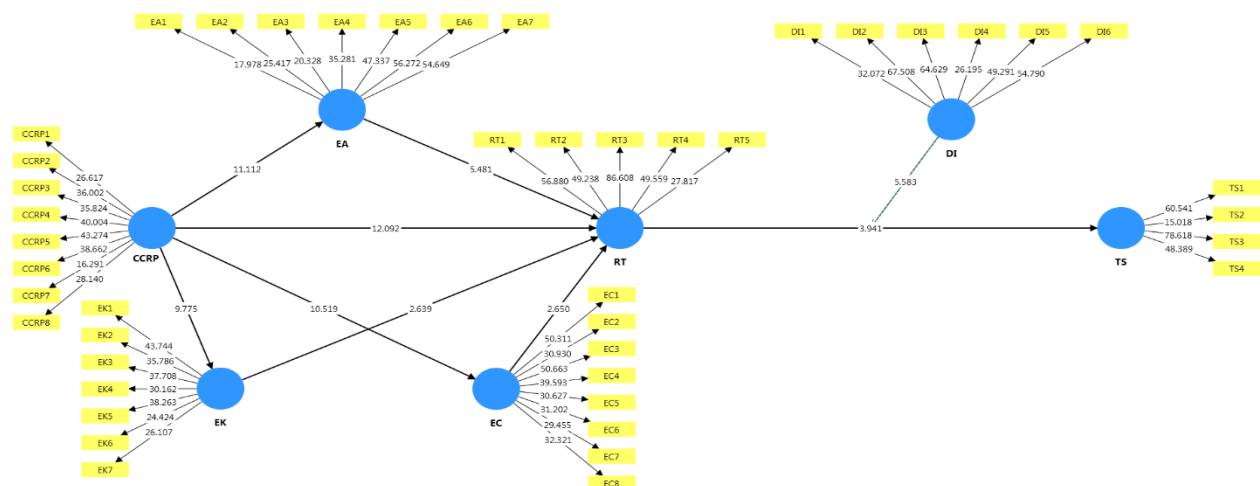


Figure 3: Structural Model

5. Discussion

Based on the results of a study conducted in this context, the present study offers a comprehensive understanding of the relationship between climate change related perceptions and tourists' environmental cognitions, emotions, tourism behaviours and experiences in the emerging tourism paradigm of Regenerative tourism. Climate related risks are becoming a challenge to every tourist destination in the world, and travelers are expected to interpret, assess and react to climate risks that will determine their attitudes and actions towards travel. To be able to form a conceptual model to explain these interconnected processes, CCRP, environmental awareness, environmental knowledge, environmental concern, RTI, destination image, and TS were combined into a single theoretical framework. The results of the present study agreed with H1 and H2 as it showed that the perception of climate change risk had significant positive effects on environmental awareness and environmental knowledge among tourists. The results indicate that climate change perceived as a serious threat to the environment increases tourists' awareness of environmental issues and gives them more knowledge about sustainability, conservation and ecology problems. In line with Protection Motivation Theory, perceived threat in the environment triggers cognitive appraisals to attend to environmental information and gain more knowledge about environmental problems (Tran, 2025). Tourists' understanding of the potential impacts of climate change, such as ecosystem degradation, loss of biodiversity, extreme weather events,

and environmental deterioration at tourism sites increases their awareness of the need for environmental protection and sustainable development. However, the perceived risks encourage tourists to actively seek information and knowledge of environmental conditions as well as adaptation measures and sustainable tourism practices, thus increasing their environmental knowledge (Baig, Ali, & Khan, 2024). These results align with earlier research that has indicated that risk perceptions have a significant influence on raising the environmental consciousness and in turn, environmental learning among individuals. The results suggest that CCRP is an important psychological mechanism which influences not only awareness but also knowledge, as it prompts tourists to think about environmental issues. With the growing awareness of climate-related issues and increased environmental knowledge among tourists, they are able to understand the significance of sustainability efforts and make informed choices for their travel.

The results of the present study supported H3 and H4 as both CCRP and environmental concern showed positive significant influence on environmental awareness and RTI respectively. The results of this study offer valuable information on the psychological mechanisms that drive tourists to react to environmental challenges stemming from climate change. The result is a positive correlation between the tourist's perception of climate change threat and his or her environmental concern, which indicates that tourists who think climate change is a serious threat are more likely to feel concerned about environmental issues and take responsibility for protecting the environment (Udden Babar et al., 2025). Tourists are more likely to be concerned about the future of natural resources and the sustainability of tourism destinations when they are aware of the potential impacts of climate change, such as environmental degradation, biodiversity loss, ecosystem disruption, and threats to tourism destinations. The result is in line with Protection Motivation Theory, which suggests that perceived threats produce affective reactions which motivate them to become more attentive to environmental threats and more supportive of protective actions (Khan et al., 2025). The findings are also in line with earlier research which found risk perceptions are a major factor influencing environmental concern through raising awareness of environmental vulnerability and the need for conservation. Moreover, the results showed that environmental awareness plays a significant role in increasing the tourists' RTI, which suggests that tourists with higher environmental awareness are more likely to participate in tourism activities that can contribute positively to creating a good environment, improving the environment, and building a happy community.

The findings of the present study confirmed H5 and H6 as environmental knowledge and environmental concern were found to have significant positive impacts on RTI. These results indicate that tourists with a higher level of knowledge about environmental issues and with higher environmental well-being concerns are more likely to be proactively involved in tourism activities that actively promote environmental restoration, ecological enhancement and community development (Rauf, de Oliveira Menezes, & Jawaid, 2024). The large impact of environmental knowledge suggests that more informed tourists can better understand the environmental impacts of tourism and be more likely to value appropriate tourist behaviour for sustainability and regeneration. People with higher environmental knowledge are more likely to understand the links between ecosystem health, biodiversity conservation, long term destination resilience and tourism, and are willing to support tourism programs that have positive environmental consequences (Shakeela & Jose, 2025). This discovery aligns with previous research, which has identified environment-related knowledge as being predictive of environmentally responsible actions, sustainable consumption, and conservation efforts. The findings also indicate that knowledge is a valuable cognitive tool that helps tourists to make informed choices and make judgments about the benefits of regenerative tourism practices. Likewise, the positive relationship between environmental concern and RTI shows the significance of emotional involvement in tourism behaviors. Those who are truly mindful of the environmental destruction, climate change and ecological sustainability seem to be more interested in tourism experiences that are eco-friendly and benefit the community. Even though the effect sizes for environmental knowledge, environmental concern, and RTI on downstream outcomes were statistically significant, the magnitude of the effects were relatively small indicating that these factors are additive rather than additive and dominant. This means that other contextual factors like environmental values, trust and destination resilience could also influence the regenerative tourism behavior.

The results of the present study verified H7 and H8 by proving that the RTI positively affected TS and it was revealed that the destination image significantly strengthened the relationship between RTI and TS. The positive correlation between the RTI and TS suggests that the tourists who agree to participate in regenerative tourism activities are satisfied with their tourism experiences (Alhitmi, Rahman, & Bayram, 2024). The results indicate that the modern tourist is looking for more meaningful, value-added and purposeful experiences than just recreational experiences. Tourists who feel their travel has a positive impact on the sustainability of the environment and community development have a higher sense of satisfaction, achievement, and attachment to the travel destination. These experiences not only contribute to the quality of the tourism experience but also to positive assessments of satisfaction. The findings align with prior research which found that environmentally responsible tourism actions and experiences of sustainability create positive psychological results, such as enjoyment, authenticity, and emotional wellbeing (Rahman et al., 2024). The results also confirm that tourists are not only satisfied by the attributes of their destination and the quality of services provided, but also by the positive outcomes of their actions on the destination's environment and society. Moreover, the study found that the relationship between RTI and TS is significantly moderated by destination image, creating a positive effect when tourists have positive images of the destination. The result shows that destination image is one of the significant contextual variables which can improve the effectiveness of the intention to pursue regenerative tourism in creating satisfying tourism experiences (Yeoman, 2024).

Visitors with positive intentions for regenerative tourism are likely to feel more comfortable knowing that their visit is impacting and having some value in a destination with positive environmental reputation, natural value, responsible management and sustainability pledges. In such situations, tourists are more likely to feel more consistent with their personal environmental values and characteristics of the destination, which increases positive emotional responses and general satisfaction. However, the effect on RTI to satisfaction may be less pronounced if the destination image is less positive; tensions between tourists' ideals of environment and the destination's outcomes may arise. In general, the results obtained in this study are coherent and can be explained in a meaningful way from a theoretical point of view for tourists' reactions to climate change in the tourism context. All hypotheses put forward are accepted, which indicates that the perception of climate change triggers a chain of cognitive and emotional processes that contributes to the building of environmental awareness, environmental knowledge, environmental concern, and finally, to increased tourists' intentions to engage in regenerative tourism. These intentions, in turn, are key to TS, especially when underpinned by a positive destination image. The results confirm the perspective that today's tourists are not only passive consumers of tourism products but very active agents who want to have a positive impact on environmental and social development.

5.1. Implications

5.1.1. Theoretical Implications

The current research has several theoretical implications for the tourism, environmental psychology and sustainability literature. First, the study extends the application of Protection Motivation Theory in the tourism context by revealing that the influence of the risk perception of climate change on tourists' cognitive responses, namely environmental awareness and environmental knowledge, on their affective responses, namely the environmental concern, subsequently affects the RTI and TS. Second, the study reveals that the cognitive responses of the tourists towards the risk of climate change (cognitive responses), namely environmental awareness and environmental knowledge, have indirect effects on TS through the mediator of tourists' affective response towards the risk of climate change (affective response). This study acknowledges and builds on the previous studies, which mainly focused on sustainable tourism behaviors, environmental attitudes and risk perceptions, but attempts to combine all these constructs in a framework that explores the psychological processes through which climate related risks influence tourism outcomes. The results will add to the current body of regenerative tourism literature by naming three constructs that are important antecedents to RTI – environmental awareness, environmental knowledge, and environmental concern – as a means to expand understanding of what inspires tourists to participate in tourism practices that have the potential to restore and/or enhance the environment. In addition, the study also advances the theory of tourism by introducing the concept of RTI as an important mechanism that can be used to explain the

relationship between tourists' perception of the environment and tourists' satisfaction. Adding the moderator destination image to standard theoretical models also enriches the known models, showing that the effectiveness of RTIs is dependent on contextual factors related to the destination. For this reason, the study is relevant for the integration of a more comprehensive knowledge of the tourist behaviour in a sensitive environment, and it can serve as a solid theoretical paradigm for further research on the theme of climate change, sustainability, regenerative tourism and tourist experiences in an integrated approach.

5.1.2. Practical Implications

The results and implications of the present study for tourism managers, destination marketers, policymakers, environmental organizations, and sustainability practitioners are discussed in detail. The findings indicate that environmental awareness, environmental knowledge, and environmental concern can be significantly influenced by increasing the awareness of tourists towards climate related risks and can further motivate the tourists to make decisions for regenerative tourism. Hence, destination management organizations need to promote environmental communication strategies, educational campaigns, interpretive programs and awareness programmes on sustainability issues as a way of raising tourists' awareness of the problems of climate change and environmental conservation. The establishment of opportunities for visitors to engage in activities such as ecosystem restoration, biodiversity conservation, community development, and environmental stewardship can be another way to support regenerative tourism. As RTI proved to improve TS, the destinations need to actively create tourism experiences that enable tourists to have a positive impact on the environment and social wellbeing, while also enjoying high quality travel experiences. Moreover, the moderating effect of destination image shows the need for establishing and maintaining a positive destination image by visible sustainability measures, environmental certification, environmental conservation and responsible tourism policies. These initiatives need to be communicated well to destination marketers in order to reinforce tourists' perceptions of the quality of the destination and their environmental commitment.

These findings can also inform the creation of tourism policies that incorporate aspects of climate adaptation, environmental protection and regenerative tourism. Tourism stakeholders can create a more satisfied tourist, a more competitive tourism destination, a more resilient tourism destination, and a more sustainable long-term tourism development by creating environmentally informed tourists and promoting destination as environmentally responsible and regenerative space. Incorporating regenerative tourism into service design can be done through the provision of eco-volunteering packages, carbon neutral accommodation, local sourcing and conservation-based activities. Sustainability and climate adaptation policies for tourism destination management can be institutionalized by public tourism authorities. In Murree and Nathia Gali, interventions should focus on waste management and crowd control as it is facing pressure from overtourism. The focus on Hunza and Gilgit should be on the conservation of glaciers, protection of biodiversity, and community-based ecotourism. Conservation efforts in Kashmir could target efforts at restoring the ecosystem and ensuring responsible visitor practices. These destination-specific strategies can help to improve the environment protection and customer satisfaction.

5.1.3. Limitations and Future Directions

The current study has also a number of restrictions that need to be recognised and further explored in future studies. First, the study used a cross-sectional research design, thereby restricting the ability to provide causal relationships among the variables and a description of changes in the perceptions of tourists, their attitudes and behaviors over time. Longitudinal designs could be used in future studies to investigate the changes of CCRP, environmental awareness, environmental knowledge, environmental concern and RTI over time and as a response to fluctuation of environmental conditions, tourism experiences, etc. Second, the study was self-reported, and so may be open to common method bias and social desirability bias, especially when assessing environmentally responsible attitudes and intentions. Future researchers can use more than one data source, behavioral observations, and/or experimental techniques to confirm results. Third, the study investigates the psychological mechanisms between CCRP and RTI, and TS, but other variables that may be involved in this relationship were not included in the model, such as environmental values

and values towards the environment, ecological identity, place attachment, destination trust, perceived destination resilience, environmental responsibility, and pro environmental norms. The proposed framework can be extended in future research to include mediating and/or moderating variables. Furthermore, the effects of cultural, geographical, and destination specific influences on tourists' environmental perceptions and behavioral intentions are not included in the model; thus, further studies are needed to replicate the model among different countries, tourism situations, and tourist groups to broaden the model's generalizability. The different types of tourism (e.g., coastal tourism, heritage tourism, adventure tourism, ecotourism) could also be compared to determine if the relationships observed are different for various tourism segments. Moreover, qualitative and mixed methods can offer a better understanding of the tourists' motivations, experiences, and understanding of regenerative tourism and climate change challenges. Such research would help in developing a deeper understanding of the role of tourism in effectively addressing environmental sustainability issues in a climate conscious world.

6. Conclusion

The study shows that the psychological trigger of the regenerative tourism intention is the climate change risk perception mediated by environmental awareness, knowledge, and concern. The results indicate that tourists who have higher threat appraisal from climate change have higher levels of climate-related cognitive responses and affect responses, which further improves their intention for regenerative tourism, using the concept of Protection Motivation Theory. The intention of regenerative tourism is also found to enhance the satisfaction of tourists, especially in the case of positive destination image. The study extends the literature on regenerative tourism beyond sustainability to include tourism behavior that is focused on restoration. Although these contributions, the cross-sectional design is restricted in terms of causal inferences and generalizability. Future studies should use a longitudinal and experimental design approach, compare the destinations and use a qualitative approach to explore the concept of regenerative tourism from the tourists' perspective in practice.

Author Contributions

Muhammad Irfan Abbas: Write the initial complete draft
Shahid Nawaz: Supervise and proofread the final draft.

Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest w.r.t the research, authorship and/or publication of this article.

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Appendix-A Questionnaire

Destination Image

1. The destination is known for its beautiful landscapes and natural attractions.
2. This destination is widely regarded as a great place to visit for cultural experiences.
3. The destination has a positive reputation for its hospitality and service.
4. I think of this destination as an ideal vacation spot.
5. The destination offers a rich cultural heritage that enhances the tourist experience.
6. I have heard mostly positive things about this destination from other travelers.

Tourist Satisfaction

1. Tourist attractions and destinations are appealing in this location.
2. The scenes and landscapes in the destination are enjoyable.
3. Transportation options in the destination are satisfactory.
4. Moving around in the destination is convenient.

Environmental Concern

1. I feel personally responsible for the health of the environment.
2. I am worried about the current state of the environment and its future.
3. I believe that environmental problems are serious and require immediate action.
4. I am concerned about the loss of biodiversity and the extinction of species.
5. I feel upset when I see or hear about environmental damage.
6. I believe that climate change is one of the most critical issues of our time.
7. I often think about how my actions affect the environment.
8. I am deeply concerned about the impact of human activity on the environment.

Environmental Knowledge

1. Reducing energy use can have the greatest impact on reducing the threat of global warming.
2. Biodiversity describes the existence of many different kinds of animals and plants in various environments.
3. The primary environmental benefit of a wetland is filtering water.
4. The ozone layer in the earth's upper atmosphere protects us from harmful, cancer-causing light rays.
5. The United Nations Environmental Programme (UNEP) works to protect the physical earth.
6. Carbon dioxide, methane, water vapor, and nitrous oxide are examples of greenhouse gases.
7. Approximately 70% of all freshwater withdrawn for human use is used for irrigation.

Regenerative Tourism

1. I take care of the natural, social, and cultural environment of places I visit.
2. I respect monuments of the places I visit.
3. I try to learn about the culture and tradition of places I visit.
4. I buy products crafted by local people from places I visit.
5. I get engaged in the host culture and tradition of places I visit.

Climate Change Risk Perception

1. I believe that climate change is real.
2. Human activities are a major cause of climate change.
3. Climate change is mostly caused by human activity.
4. The main causes of climate change are human activities.
5. Overall, climate change will bring more negative than positive consequences to the world.
6. Climate change will bring about serious negative consequences.
7. The consequences of climate change will be very serious.
8. Climate change is not occurring.

Environmental Awareness

1. Increased greenhouse gases in the atmosphere is a serious environmental issue.
2. The use of genetically modified organisms (GMOs) poses significant risks to the environment.
3. Nuclear waste disposal and management is a major environmental concern.
4. Clearing forests for other land use has harmful long-term environmental consequences.
5. Air pollution is a significant threat to public health and the environment.
6. The extinction of plant and animal species is a critical issue for biodiversity and ecosystems.
7. Water shortage is a growing global problem that needs urgent attention.