

Financing Ecotourism Ventures to Support Climate Change Mitigation. What Should the Financial Sector Be Doing in Regards to Climate Change?

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Abstract: The aim of this article is to discuss how the finance sector can contribute to climate change mitigation and adaptation through ecotourism schemes. There have been limited studies on climate change and tourism, particularly ecotourism. Therefore, knowledge on how ecotourism may support climate change mitigation and how the finance sector can contribute is critical. Tourism must play a significant role in addressing climate change as part of its broader commitment to sustainable development. One way to mitigate climate change in the tourism sector is to implement the concept of sustainable tourism, a form of ecotourism. The definition and principles of ecotourism show its potential, in mitigating climate change. There is growing recognition the world needs to shift capital and investment from high to low carbon activities to avoid dangerous climate change outcomes. Global financial institutions should support the ecotourism development with sufficient capital to implement best practices such as sufficient energy management.

I. Introduction

Climate change recently has become a global issue. The scientific evidence and the dynamics of the financial system suggest that climate change will threaten financial resilience and longer-term prosperity in several ways. Various efforts have been undertaken but still have not shown good results. Rapidly increasing effects of climate change are calling for new approaches. One approach is through tourism, which has both positive and negative impacts on climate change. This sector, especially transportation and accommodation, has a significant effect on global CO₂ emission. At the same time, tourism also brings enormous

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opportunities to inspire positive action, such as creating climate-friendly operational management systems and strategies and engaging travelers in awareness programs.

Sustainable tourism approaches, such as ecotourism, may be adopted and used to mitigate climate change problems. Ecotourism can reduce greenhouse gas emissions; educate communities, industries, and tourists on how to prepare for and adapt to climate change; and protect the environment. Ecotourism is a good way to promote environmental education and awareness to both hosts and guests. It has high financial potential for natural conservation through entrance fees, levies, concessions and other activities. Ecotourism needs both financial and technical support to confront climate change, which is global issue. Hence we need to rethink the model of ecotourism to enhance global climate change mitigation strategies. The financial sector can contribute in developing the framework and/or in developing the ecotourism industry itself.

There have been limited studies on climate change and tourism, particularly ecotourism. Therefore, knowledge on how ecotourism may support climate change mitigation and how the finance sector can contribute are critical. The aim of this article is to discuss how the finance sector can contribute to climate change mitigation and adaptation through ecotourism schemes.

II. Background: Why the Financial Sector Should Be Involved in Climate Change Mitigation

Addressing climate change is crucial for the financial sector, since climate change will increase costs. Climate change may affect financial stability in three ways: physical risk, liability risk and transition risk. Physical risk includes the impact on insurance liabilities and the value of financial assets that arise from climate, such as floods and storms that damage property or disrupt trade. Liability risk is the impact that could arise if parties who have suffered loss or damage from the effects of climate change seek compensation from those they hold responsible. Transition risk involves the financial risks that could result from the process of adjustment towards a lower-carbon economy. Changes in policy, technology and physical risks could prompt a reassessment of the value of a large range of assets as costs and opportunities become apparent (Carney, 2015).

Currently, insurance losses occur due to weather-related events at higher levels. Climate change will affect general insurers directly exposed to losses or damages caused by increases in frequency or severity of extreme weather events, such as stronger heat waves, longer droughts, and more severe storms (Carney, 2015). For example, Europe has already sustained severe damage from climate change.

Storms in 1999 and floods in 2002 each cost 13 billion euros, while a heat wave in 2003 cost 10 billion euros. Although no precise estimate of all future costs can be made, a European Commission paper estimates the future cost of cumulative global damage at 74 trillion euros at today's value if effective action is not taken. In the UK, the annual cost of flooding this century will rise to as much as 30 billion euros. Businesses are already increasingly reporting reduced profitability because of unusual weather (Allianz Group & WWF, 2005).

Climate change affects insurers through the risks they accept from clients. Since climate experts predict changes in the intensity and distribution of extreme weather events (especially water-related events and storms) that increase the resultant risk of catastrophic property claims, insurers are likely to regard climate change as a threat rather than an opportunity. Banks face credit risks because policies to cut emissions can create costs for carbon-intensive sectors and companies. Price volatility in carbon markets (CO₂, oil, gas, coal) and climate-related commodities leads to uncertainty in financial projections (Allianz Group & WWF, 2005).

Climate change is one of the most financially significant environmental issues facing investors today. Institutional investors, consultants, fund managers, financial analysts and companies face different challenges. Each can take specific action, primarily to develop understanding and respective tools regarding the financial implications of climate change. Therefore, understanding how climate change will impact or enhance the value of investments and to what extent, is important (Allianz Group & WWF, 2005). The impact of climate change and what to do about it, as well as the case for compensation, is formally on the agenda of the United Nations Framework Convention on Climate Change (*UNFCCC, 2014*)

Financial sector concerns regarding climate change are increasing. Some institutions are already taking action, but much work needs to be done, both by the industry and by governments. The way forward is to build on these actions and move them into mainstream finance. One crucial step is the implementation of government policies that have transparency, longevity and certainty. Partnerships between governments and the finance sector are also vital for areas where blockages to capital flows are greatest (AIGCC et al., 2015).

III. What is Climate Change?

The official definition by the United Nations Framework Convention on Climate Change (UNFCCC) states that climate change is the change that can be attributed “directly or indirectly to human activity that alters the composition of the global

atmosphere and which is in addition to natural climate variability observed over comparable time periods” (United Nations, 1992, p. 7). The Intergovernmental Panel on Climate Change (IPCC) defines “climate change” as “a change in the state of the climate that can be identified (e.g. using statistical test) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer” (United Nations Framework Convention on Climate Change, 2011). This definition refers to any change in climate over time, both by natural cause as well as human activity.

The climate is naturally dynamic, but human activities have worsened the situation by releasing greenhouse gases (GHG), including carbon dioxide (CO₂), into the atmosphere, which cause the climate to change unpredictably. This gas is produced when fossil fuels are used to generate energy or when forests are cut down and burned. The impact of climate change, namely floods and droughts, also cause destruction and loss of infrastructure, property, crops, livestock and people’s lives (MoE, 2006).

Climate change will have a multitude of effects on society and nature if we fail to take actions to slow it down. Climate change will lead to increased heat stress, a rise in insect-borne diseases, and increases in rates of skin cancer and food poisoning. The extraordinary heat wave in 2003 caused deaths in Europe and disrupted agriculture, inland shipping, and electricity production (Allianz Group & WWF, 2005).

Governments have attempted to find a way to cut emissions since 1992, when they met in Rio de Janeiro and agreed on the first global warming accord. This agreement was known as *the UN Framework Convention on Climate Change* and has been ratified by 195 countries. The framework's main goal was to stabilize greenhouse gases at a level that would avoid dangerous levels of warming. Since then, the UN has been holding annual climate change talks for 20 years, called Conference of the Parties (COP). There have been 20 COPs since 1995. Several COPs that have resulted in climate change mitigation and adaptation, such as the Kyoto Protocol and Copenhagen convention, have come to public attention (Clark, 2015).

The **Kyoto Protocol** (1997) treaty aimed to fill a gap in the Rio convention by setting out legally binding targets for countries to meet specific emissions targets. However, it only applies to wealthy countries that now account for a dwindling share of global emissions, and the US never ratified it, largely because the Protocol did not require China to cut its pollution. The Kyoto Protocol showed that it was impossible to force countries to cut emissions, so the new COP21 deal is based on voluntary action plans. However, the commitments are not sufficient to prevent global temperatures warming more than 2°C from pre-industrial levels, a threshold agreed at previous COPs (Clark, 2015). The achievement of the

UNFCCC/Kyoto Protocol was to provide the foundation for future mitigation efforts, such as a global response to the climate problem, an array of national policies, and an international carbon market and new institutional mechanism (Metz, Davidson, Bosch, Dave, & Meyer, 2007).

Copenhagen (2009) was designed to make up for Kyoto's deficiencies. Countries tried to come up with a more universal climate deal. But that effort ended in acrimonious failure, so a new round of negotiations was launched in 2011 to create a new accord in Paris that will require action from all countries, rich and poor. COP 21 took place in Paris recently (Clark, 2015) and was attended by about 40,000 ministers, officials, business executives, climate campaigners and journalists. Delegates from 195 countries were expected to finalize an agreement to cut global emissions of the greenhouse gases scientists warn are on track to warm the planet to risky levels (<http://www.ft.com/intl/cms/s/2/cff1bae6-971e-11e5-95c7-d47aa298f769.html#axzz3t6PZiZE2>. 02-12-2015). Key elements approved at COP 21 summit include (Gosden, 2015):

1. An agreement to limit the increase of global average temperatures to “well below 2°C above pre-industrial levels” and “pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change”
Therefore, countries should make an effort to “achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century” – in other words, net carbon emissions should be zero.
2. National pledges to cut greenhouse gas emissions in the 2020s
However, the targets are not legally binding, and a country will not be penalized if it fails to meet them.
3. A plan to make countries pledge deeper emissions cuts in future, improving their plans every five years
Each country's pledge must “represent a progression” on their previous one “and reflect its highest possible ambition.”
4. An agreement for developed nations to continue helping developing countries with the costs of going green and the costs of coping with the effects of climate change
5. A plan to develop and implement a new transparency framework that will determine whether countries are actually carrying out their pledges. Countries will have to disclose an inventory of their emissions to track their progress in hitting their national target, while developed countries should also give information on the finances they are providing or mobilizing.

The main barrier to building agreement in COP is the divide between wealthy countries that grew rich from burning fossil fuels and poor countries trying to emulate their prosperity. It is unfair to expect developing countries to stop using cheap, abundant coal and other fossil fuels unless rich nations give them a lot of money and technology to help them build cleaner energy systems. With most harmful gases coming from burning fossil fuels, which power almost every country's economy, the agreement has been deadlocked for decades as governments bicker over the extent to which each should cut their emissions and who should bear the costs (Clark, 2015).

Greater cooperative efforts to cut emissions will help reduce global costs for achieving a given level of mitigation and improve environmental effectiveness. Successful international agreements that incorporate distributional considerations are environmentally effective, cost-effective, and institutionally feasible (Metz et al., 2007).

Societies can respond to climate change by reducing GHG emissions and adapting to its impacts. Many impacts can be avoided, reduced or delayed by mitigation, but adaptation will be necessary to address impacts resulting from the warming that is already unavoidable due to past emissions. The capacity to adapt and mitigate is dependent on socio-economic and environmental circumstances and the availability of information and technology (United Nations Framework Convention on Climate Change, 2011).

Some options for adaptation (United Nations Framework Convention on Climate Change, 2011, p. 6) include:

- Vulnerability to climate change can be exacerbated by the presence of other stresses, arising from current climate hazards, poverty, unequal access to resources, food insecurity, trends in economic globalization, conflict and incidence of diseases such as HIV/AIDS;
- Adaptation will be required at regional and local levels to reduce the adverse impacts of projected climate change and variability, regardless of the scale of mitigation undertaken;
- A wide array of adaptation options is currently available, but more extensive adaptation is required to reduce vulnerability to future climate change. There are barriers, limits and costs, but these are not fully understood;
- Adaptive capacity is intimately connected to social and economic development, but it is not evenly distributed across and within societies.

Regarding mitigation, changes in lifestyle and behavior patterns can contribute to climate change mitigation across all sectors. Those changes include occupant behavior; cultural patterns and consumer choice in buildings; reduction of car usage and efficient driving styles in relation to urban planning and availability of

public transport; and behavior of staff in industrial organizations in light of reward systems (Metz et al., 2007).

Management practices can also have a positive role. Policies that provide a real or implicit price of carbon could create incentives for producers and consumers to significantly invest in low-GHG (green house gas) products, technologies and processes. A wide variety of national policies and instruments are available to create incentives for mitigation. Their applicability depends on national circumstances and an understanding of their interactions, but experience from implementation in various countries and sectors shows there are advantages and disadvantages (United Nations Framework Convention on Climate Change, 2011).

Making development more sustainable by changing paths may contribute to climate change mitigation (Metz et al., 2007). An increased understanding of the possibilities for climate response in several sectors allows for the realization of synergies and avoidance of conflicts with other dimensions of sustainable development. Both synergies and trade-offs exist between adaptation and mitigation options.

IV. What Can Ecotourism Do to Mitigate Climate Change?

Tourism can play a significant role in addressing climate change if the innovation and resources of this sector are fully mobilized and oriented towards this goal. The concern of the tourism community regarding the challenge of climate change has increased. Several industry associations and businesses have voluntarily adopted GHG emission reduction targets, engaged in public education campaigns on climate change and supported government climate change legislation (World Tourism Organization (UNWTO) & United Nations Environment Programme (UNEP), 2008).

Tourism has both positive and negative impacts on climate change. According to the World Tourism Organization (UNWTO) & United Nations Environment Program (UNEP), tourism at the global level produced from 5 to 14 percent of global CO₂ emissions through transportation, accommodation and other tourism activities. The accommodation sector represents approximately 20 percent of emissions generated from tourism activities. This is considered relatively high compared to other sectors.

Tourism must play a significant role in addressing climate change as part of its broader commitment to sustainable development. Tourism, as a non-negligible contributor to climate change, has the responsibility to reverse the growth trajectory of its GHG emissions to a more sustainable level consistent with the

actions of the international community. The climate change mitigation potential in the tourism sector is relatively high, because efforts to lower energy consumption and GHG emissions are still growing and have lacked any vision of a coordinated, sector-wide strategic response. Four major mitigation strategies for addressing greenhouse gas emissions from tourism include: reducing energy use, improving energy efficiency, increasing the use of renewable energy, and sequestering carbon through sinks (World Tourism Organization (UNWTO) & United Nations Environment Programme (UNEP), 2008).

One of the ways to mitigate climate change in the tourism sector is to implement sustainable tourism. Sustainable tourism can be adopted and used to mitigate climate change by reducing greenhouse gas emissions and educating the community, industry and tourists to prepare and adapt to changes while protecting and conserving the forest and environment (Simpson et al, 2008).

Ecotourism is a highly climate sensitive sector. With recent climate change phenomena, the world has experienced extreme weather hazards such as storms, floods, droughts and many other natural disasters. These events have negative impacts on tourism and require policymakers, planners and developers to take precautionary measures. Governments of many developing countries support ecotourism and view it as an economic strategy that is both socially and environmentally sustainable (Brooks, Franzen, Holmes, Grote, & Mulder, 2006; Kiper, 2013)

The definition and principles of ecotourism show its potential to impact climate change. The International Ecotourism Society defines ecotourism as a responsible form of travel to natural areas that conserves the environment, sustains the wellbeing of the local people and involves interpretation and education for staff and guests (The International Ecotourism Society, 2015). This definition is very supportive to the conservation of natural resources, which is one important aspect in climate change adaptation and mitigation. Those who implement, participate in, and market ecotourism activities should adopt the following ecotourism principles (The International Ecotourism Society, 2015):

1. Minimize physical, social, behavioral, and psychological impacts.
2. Build environmental and cultural awareness and respect.
3. Provide positive experiences for both visitors and hosts.
4. Produce direct financial benefits for conservation.
5. Generate financial benefits for both local people and private industry.
6. Deliver memorable interpretative experiences to visitors that help raise sensitivity to host countries' political, environmental, and social climates.
7. Design, construct and operate low-impact facilities.

8. Recognize the rights and spiritual beliefs of indigenous people and work in partnership with them to create empowerment.

The first principle is minimizing physical impacts. It means that ecotourism must strive to protect and conserve the natural resources on which it largely depends. Specific to climate change mitigation, ecotourism may contribute to protecting forest. Ecologically, forests contribute to stabilizing the climate, ecosystem preservation, biodiversity conservation and storm, flood and drought protection.

The second principle is about building environmental and cultural awareness and respect. Ecotourism is a good way to promote environmental education and awareness to both hosts and guests. By traveling to natural areas, tourists learn about, appreciate and understand the importance of nature. The more they understand the environment, the more they will contribute to conservation and climate change mitigation efforts.

The third principle is about providing positive experiences for both visitors and hosts. Giving wonderful experiences to visitors will cause them to increase their length of stay. This can reduce the carbon footprint per tourist per day and also increase economic opportunities for destinations. Reducing energy use is the most essential aspect of mitigation. This positive experience can be provide by designing attractive products promoting less carbon-intensive journeys that meet tourists' needs and desires (World Tourism Organization (UNWTO) & United Nations Environment Programme (UNEP), 2008).

The fourth and fifth principles are related to financial benefits that may occur from ecotourism for conservation, impacting local people as well as private industry. Ecotourism has high financial potential for natural conservation through entrance fees, levies, concessions and other economic activities. The economic benefits from ecotourism can also benefit environmental conservation and community livelihoods. Tourism, including ecotourism, is a big industry based on many small businesses. It may contribute to climate change mitigation, but the process must also be good for businesses. A code of ethics based on "profit with principles" should be present in ecotourism businesses. Profits should be analyzed on a long-term basis.

The sixth principle is to deliver memorable interpretative experiences to visitors that help raise sensitivity to host countries' political, environmental, and social climates. Interpretation in ecotourism can be used to improve consumer awareness and transparency related to climate change by indicating emissions on their tourism activities and product brochures. It also can be used to raise awareness on recycling, increase capacity building, and educate managers of accommodation establishments and related sectors such as architecture,

construction and engineering (World Tourism Organization (UNWTO) & United Nations Environment Programme (UNEP), 2008).

The seventh principle is to design, construct and operate low-impact facilities. This principle is related to government efforts calling for the industry to reduce CO₂ emissions. Emissions can be reduced in several ways. In energy supply, the key mitigation technology is by switching to renewable fuel, such as hydropower, solar, wind, geothermal or bioenergy. In the transportation sector, the key technology is using more fuel-efficient vehicles, changing from road transport to rail and public transport, building more cycling and walking routes, and improving land-use planning to be more environmentally friendly. In building sectors, the efforts are in efficient lighting, appliances and air conditioning, as well as improved insulation, solar heating and cooling and alternatives for fluorinated gases in insulation and appliances (Metz et al., 2007). Regarding this point, ecotourism would be a good solution for climate change mitigation efforts. Those key technologies can use local resources to develop facilities and services, saving on energy and recycling. On the other hand, ecotourists may like to walk along a trail rather than ride vehicles on a paved road. They may stay in simple accommodations and open the windows rather than using air conditioning. Many ecotourism sites use solar power rather than diesel engines.

The eighth principle is to recognize the rights and spiritual beliefs of the indigenous people. The local populations, through their indigenous knowledge systems, have developed and implemented extensive mitigation and adaptation strategies that have enabled them to reduce their vulnerability to past climate variability and change, which exceed those predicted by models of future climate change. However, this knowledge is rarely taken into consideration in the design and implementation of modern mitigation and adaptation strategies. Incorporating indigenous knowledge can add value to the development of sustainable climate change mitigation and adaptation strategies that are rich in local content and planned in conjunction with local people (Nyong, Adesina, & Elasha, 2007).

The ninth principle is to involve the local community and work in partnership with them to create empowerment. Climate change mitigation actions can be successfully achieved if all stakeholders are involved in the process, including the local community. As a result the community knowledge and awareness regarding climate change will improve, and they may support the actions.

The tourism industry needs more appropriate funding mechanisms to support climate change adaptation and mitigation. Currently, there are no specialized banks for tourist investment, nor are the banks usually aware of the sector's specific needs. However, there are a number of financial mechanisms that may be applied for funding tourism projects, such as venture capital schemes through the

private equity market. In the case of new technologies, all interested companies need to help the tourism sector, including local communities, as they enter into e-business ecotourism and other community-based enterprises.

V. How Can the Financial Sector Support Climate Change Mitigation Through Ecotourism?

There is growing recognition that the world needs to shift capital and investment from high to low carbon activities to avoid dangerous climate change outcomes. The finance sector acts as the mechanism through which capital flows and is distributed to different parts of the economy. Climate change is a systemic risk that is impacting the finance industry, as it is impacting all sectors of the global economy (AIGCC et al., 2015).

The finance sector is an important source of climate mitigation and adaption funding. Banks play an important role in climate-related financing and investment, credit risk management, and the development of new climate risk hedging products. For example, they issue bonds to increase private finance from capital markets, some of which is then used to support projects that deliver climate change outcomes. However, the major focus of the private sector to date has been on supporting mitigation activities (Atteridge, 2010). The finance sector presides over a large pool of capital, more of which could be steered towards low-carbon, climate-resilient activities. The core participants in the finance sector include banks, insurance companies, pension funds, fund managers, mutual funds, sovereign wealth funds, charities and endowment funds (AIGCC et al., 2015).

The finance community is emerging as a partner in responding to climate change, but investment by the private sector remains too low (The Climate Change Support Team of the United Nations Secretary, 2015). Therefore, at the 2014 Climate Summit, financial institutions from developed and developing countries committed to increase finance to support low-carbon and climate-resilient investments (The Climate Change Support Team of the United Nations Secretary, 2015). Known as the 2014 global investor statement on climate change, those initiatives were signed by 348 investors representing more than USD 24 trillion in assets. Those initiatives are (UNEP, 2015, p. 20):

- Work with policymakers to support and inform their efforts to develop and implement policy measures that encourage capital deployment to finance the transition to a low-carbon economy and investment in climate change adaptation.

- Identify and evaluate low-carbon investment opportunities that meet financial institution investment criteria and consider investment vehicles that invest in low carbon assets subject to risk and return objectives.
- Develop capacity to assess the risks and opportunities presented by climate change and climate policy to investment portfolios, and integrate, where appropriate, this information into investment decisions.
- Work with companies in which financial institutions invest to ensure they are minimizing and disclosing the risks and maximizing the opportunities presented by climate change and climate policy.
- Continue to report on the actions taken and the progress made in addressing climate risk and investing in areas such as renewable energy, energy efficiency and climate change adaptation.

There are a number of different initiatives involving financial institutions, with the aim to scale up financing available for climate change investments, both in mitigation and adaptation (UNEP, 2015). Finance sector actions and contributions in solving climate change encompass the following six areas (AIGCC et al., 2015):

1. Low-carbon and energy-efficient finance and investing:

- Pension fund allocation to low carbon and energy efficiency: Some pension funds are increasing their allocation to low-carbon and energy-efficient assets, thereby playing a vital leadership role
- Supporting renewable energy projects: Some institutional investors are investing in renewable projects via private equity and infrastructure opportunities. Some banks are shifting their loan books towards financing renewables projects. For example:
 - 1) US public pension fund CalSTRS invests over 3 percent of its portfolio in low-carbon investments, including private equity renewable energy investments, LEED and Energy Star Real Estate and green bonds. CalSTRS has a green initiative taskforce that manages the risks and captures the opportunities associated with global sustainability issues by identifying environmentally focused strategies to enhance the risk-adjusted returns of the investment portfolio.
 - 2) Australian superannuation fund HESTA invests approximately 3 percent of its portfolio in low carbon assets. Its investments include private equity, real estate, forestry and renewable energy infrastructure assets.

These actions are having a direct impact on the availability of capital for renewable energy projects.

- Partnerships in developing countries: Unique partnerships are forming between governments, development banks and financial institutions to finance and invest billions of dollars into renewable energy and energy efficiency opportunities in emerging markets. For example:
 - 1) Danish pension funds partner with the Danish state and the Investment Fund for Developing Countries (IFU) to invest as much as EUR 1 billion in renewable energy projects in developing countries. The Danish state, IFU and a number of institutional investors have established the Danish Climate Investment Fund. The funds invest in renewable energy projects and adaptation projects, such as disaster preparedness and coastal management. The first investment was made in the first quarter of 2011. The current total commitment to the Danish Climate Investment Fund is DKK 1.2 billion.
 - 2) European banks partnered with IFC and GEF in supporting renewable energy and energy efficiency projects. The program, called Commercializing Energy Efficiency Finance (CEEF), launched by IFC with support from the Global Environment Facility (GEF). The partner banks include Ceska Sporitelna; CSOB; GE Money Bank; Dexia; Swedbank; SEB Vilniaus Bankas; Hansabankas; Raiffeisen Leasing; Raiffeisen Bank; OTP; Erste; K&H; HV/Unicredit. The program enabled total investment of US\$330 million through the provision of partial credit guarantees supporting 829 projects in Eastern Europe. The projects were geared towards small-scale RE projects and EE projects with small-to-medium enterprises and households.
 - 3) Chinese banks participate in the China Energy Efficiency Finance Program, providing loans worth US\$790 million, financing 226 projects and reducing emissions by 19 million tons of carbon dioxide/year. This program has enabled key players in China's economy, namely banks, utility companies, government agencies, and suppliers of energy efficiency equipment and services, to collaborate in creating a sustainable financing model. For example, Chongqing Pawai Energy company received a 5Y loan of US\$1.5 million via China's Industrial Bank to implement energy efficiency savings on its three coal power plants.
 - 4) HSBC Armenia partners with IFC to finance Energy Efficiency and Renewable Energy projects in Armenia. As the result, HSBC Armenia was able to build a portfolio of nine small-to-medium-sized energy efficiency projects in Armenia, totaling around US\$25 million with aggregate energy saving of 34,991 MWh/year, resulting in GHG emission reduction of 6,614 tCO₂e/year.

- Growing green bond market: A flourishing green bond market exists and is growing, which is integral to providing the debt capital needed to finance the low carbon transition. Green bonds refer to instruments in which the proceeds will be exclusively applied (either by specifying use of proceeds, direct project exposure, or securitization) towards new and existing green projects, which promote climate or other environmental sustainability purposes (International Capital Market Association, 2015). The emergence of the green bond market is playing an important role in helping to divert capital towards activities that support a low carbon, climate resilient world. The types of projects supported by green bonds include renewable energy plants, energy efficiency projects, new technologies in waste management and agriculture that reduce greenhouse gas emissions, forest and watershed management and infrastructure to prevent climate-related flood damage (AIGCC et al., 2015). Some examples of finance sector investment in green bonds are (AIGCC et al., 2015):
 - 1) In 2008 SEB partnered with the World Bank (IBRD) as underwriter in issuing the world's first independently reviewed green bond. The product was designed to respond to specific investor demand for a triple-A rated fixed income product that supported projects in developing countries that address the climate challenge. As of July 2014, the World Bank (IBRD) had raised US\$6.4 billion in green bonds through 68 transactions and 17 currencies.
 - 2) Zurich Insurance Group invests up to US\$2 billion in AAA-rated green bond funds. The objective is to increase the benefit of developing scale and liquidity in the green bond market and encourage new issuers to come to market, while promoting robust and transparent project selection and reporting standards for impact.
 - 3) US firm Bank of America Merrill Lynch (BoA) joined in corporate green bond issuance and set a ten-year goal to reach US\$50 billion in environmental business. The proceeds are used to finance renewable and energy efficiency projects via loans and credit lines.
 - Reducing real estate emissions and energy use: The industry is utilizing new tools, setting targets, steering portfolios and financing activities towards lower carbon, higher rated, energy efficient buildings, a core pillar for achieving the energy efficiency improvements needed to avoid dangerous climate outcomes.
2. Emissions reducing finance and investing: New techniques are being implemented by financial institutions to reduce the carbon emissions of loan books and investment portfolios, an indirect but potentially powerful

mechanism for reducing global emissions. In addition, new approaches are being implemented by institutional investors to manage the risks stemming from exposure to fossil fuel companies.

3. Adaptation finance and investing: Banks and insurance companies are developing financing solutions to support adaptation projects, primarily in developing countries, with significant potential for more financial institution involvement in partnership with governments, development banks and developing country agencies.
4. Measurement and transparency: The industry is collaborating to improve carbon and climate change risk/performance measurement, as well as reporting by companies and financial institutions themselves, a crucial building block for managing and reducing carbon emissions.
5. Engagement with companies: Growth in proxy voting action related to climate change, as well as extensive company engagement, is having a direct impact on corporate reporting of carbon emissions and strategies to respond to climate change.
6. Engagement with policy makers: The industry is collaborating to engage with policy makers to influence policy and regulatory outcomes that encourage greater participation from the finance industry in the transition to a low-carbon, climate-resilient economy.

Related to the tourism industry, several examples of financing include:

- Providing loans and equity financing for hotels and other tourism businesses. This has been done by the International Finance Corporation (IFC) for over three decades. This institution's unique mandate is to encourage private investment, foreign as well as domestic, in developing countries (International Finance Corporation, 2015). The IFC is a private sector division of World Bank Group. Its mission is to promote sustainable private sector investment in developing countries, helping to reduce poverty and improve people's lives. It provides equity, loans and advisory services such as development of tourism concessions. IFC is also a GEF Executing Agency; therefore, it is able to provide concessional funding for projects that help conserve biodiversity (Keller, 2003). IFC's involvement in the tourism sector focuses on projects that promote sustainable development, enhance conservation of natural resources and the environment, and promote high standards of environmental safety (International Finance Corporation, 2015). IFC has been involved in the tourism sector since 1967 and approved over \$1.5 billion of investments in more than 180 tourism projects in over 70 countries (Keller, 2003).
- Financing private sector tourism infrastructure.

- Removing the need for collateral. One of the barriers in developing sustainable ecotourism is the difficulty in using land as collateral, especially in rural areas (Scheyvens, 1999). By applying this scheme, the chance for successful development may improve.
- Carrying out a promotional campaign through a joint effort and setting up a unified brand for different tourism businesses, with strict quality control and surveillance.
- Providing funding sources such as financial aid/loan programs for small, environmentally friendly businesses, including ecotourism ventures. This scheme has been implemented by the North American Commission on Environmental Cooperation/NACEC and the Canadian Tourism Commission/CTC). They put the information regarding the programs online for community access (www.ctc-ctx.com/ and www.cec.org/databasas/tourism/).
- Encouraging collaboration and cooperation between stakeholders in marketing tourism business.

Since sustainable tourism, particularly ecotourism, has great potential to support climate change mitigation and adaptation, global financial institutions should support ecotourism developments with sufficient capital to implement best practices, such as sufficient energy management. Financial policies, particularly in developing countries, should be focused on promoting greater sustainability in tourism businesses. Integrated financial organizations need to develop proactive strategies to manage the increasing risks of climate change through the ecotourism industry. The new model needs to be integrated with financial models to allow investments in various areas.

In ecotourism, several institutions that already involve in financing mechanisms are:

- In 2010, the World Bank's board of executive directors approved a US\$8.7 million credit for an ecotourism project in the Republic of Cameroon. The objective of the Competitive Value Chains Project is to contribute to the growth of sustainable wood processing and ecotourism value chains in Cameroon by improving their competitiveness and investment climate. The project will finance infrastructure investments, vocational training, and policy reforms and provide direct support to firms through an innovation grant. The program will address a number of the constraints preventing the growth of the tourism industry in Cameroon. The central theme of the proposed tourism development strategy is to focus on Cameroon's world class tourism assets in order to provide several highly attractive tourism packages targeting

destinations such as Kribi, Campo Ma'an, Mount Cameroon, and the Chiefdoms (Yaounde, 2010).

- IFC's involvement in the ecotourism sector is supported by two types of ecotourism projects such as:
 - 1) Ecotourism companies that directly support conservation efforts, such as Asian Conservation Foundation (Philippines); Eg-Uur Watershed (Mongolia); Boundary Hill (Tanzania); Save Valley (Zimbabwe); Pico Bonito (Honduras); El Boqueron Ecolodge (Guatemala).
 - 2) Ecotourism projects that help manage and fund protected areas via private concessions, namely Komodo National Park (Indonesia); Inka Terra (Peru); Vilanculos Wildlife Sanctuary (Mozambique).IFC supports ecotourism projects with loans, equity and grants, as appropriate (Keller, 2003)
- Inter-American Development Bank (IDB) granted the State of Par ain a Brazilian Amazon loan (\$26.4 million) to promote ecotourism, generate new employment opportunities and increase household income. The project includes development of tourism product strategies, marketing strategies, institutional strengthening, tourism infrastructure, basic services, and environmental management. The program will finance studies, works, equipment and technical assistance in order to increase formal employment in tourism activities. The project also includes improvement of infrastructure and basic services, which promotes entrepreneurship and inclusion of low-income households in ecotourism activities. Furthermore, it will strengthen the state's tourism department and its statistics system, and it will improve environmental and social management by financing environmental planning, supervision and impact monitoring. The project is expected to create more than one thousand formal jobs directly linked to the program and lift up to 140,000 out of poverty through the resulting impact from increased visitor's numbers, longer average stay and higher tourism spending (Inter-American Development Bank, 2013).

In order to attract investors, there are some criteria that must be met by ecotourism projects. The project should be based on rigorous analysis and have a good business plan that contains a realistic market assessment, marketing plan, revenue forecast considering the full range of risks, manageable construction and operating costs, capable managers and appropriate capital structure (Keller, 2003).

Ecotourism projects also must meet three principles, including environmental sustainability, which mitigates environmental impacts and conserves biodiversity; social sustainability, which mitigates social impacts and provides sustainable livelihoods; and commercial sustainability, which means the projects should be

commercially viable as measured by financial return. To be commercially sustainable, ecotourism projects need sufficient market demand, good management, and controlled costs. Sufficient market demand must consider seasonality, transportation access, and political and economic stability, as well as competition including barriers to entry and risk of oversupply, match between market and facility and site and operator, willingness to pay and government support (Keller, 2003).

Ecotourism projects should also have strong marketing linkages, such as good relationships with travel agents, tour operators, etc. Managers should understand business and have a good track record of successfully managing tourism operations. Inexperienced players may want to consider forming a joint venture with an experienced partner. (Keller, 2003).

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