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The Caspian Coastal Greenway Vision Plan

Andrey C. Boskhomdzhiev
University of Massachusetts - Amherst, aboskhom@larp.umass.edu

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Master's Project

By:

Andre Boskhomdzhiev

MRP/MLA

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Department of Landscape Architecture

And Regional Planning

University of Massachusetts, Amherst

Approved as to style and content by:

Robert Ryan: _____

(Chairperson)

Rick Taupier:_____

(Committee Member)

Elizabeth Brabec: _____

(Department Head)

Table of Contents:

Chapter 1: Project Introduction and Context

A. Project Introduction:

The purpose of this project is to develop a greenway vision plan for the Caspian Coastal Greenway that would go from Astrakhan city in Russia, to Rasht in Iran, passing through diverse landscapes, populations and jurisdictions. The main concentration of this project would be on the section of the greenway that is within the jurisdiction of the Russian Federation. The greenway would follow an ancient trading route that passes through and used to connect Russia, Persia and India. The development of a greenway in this area would promote and reestablish cultural and trade based connections and link diverse areas. Another purpose of this greenway would be to develop a network between existing protected areas and diverse landscapes that are currently fractured. This project will develop a broad vision plan for the entire western Caspian Region. The project will identify existing protected landscapes and locate open spaces, cultural heritage landscapes and ecologically sensitive areas for future protection to create a continuous protected network.

B. Greenway Literature Review

Most publications that are available on greenways usually present a detailed analysis of development strategies, functions and uses of greenways. Greenways are very widely known through the Northern America and other countries. (Hellmund and Smith 2006, 1) There are a lot of different definitions for greenways but most authors identify that "greenways are corridors of land and water" (Hellmund and Smith 2006, 3) that provide significant social and ecological benefits.

Fabos defines greenways: "as corridors of various widths, linked together in a network in much the same way as our networks of highways and railroads have been linked". (Fabos, 1995, 5)

Ahern's definition of greenways is; "Greenways are networks of land containing linear elements that are planned, designed and managed for multiple purposes including

ecological, recreational, cultural, aesthetic, or other purposes compatible with the concept of sustainable land use. "(Ahern, 1995, 134)

Charles Little in his book "Greenways for America", offers a comprehensive definition of greenways.

> "#1) A linear open space established along either a natural corridor, such as a riverfront, stream valley, or ridge line, or overland along a railroad right-of-way converted to recreational use, a canal, a scenic road, or other route.
>
> #2) Any natural or landscaped course for pedestrian or bicycle passage.
>
> #3) An open-space connector linking parks, nature reserves, cultural features, or historic sites with each other and with populated areas.
>
> #4) Locally, certain strips or linear parks designated as a parkway or greenbelt"(Little 1990, 1).

The above authors agree that greenways are linear structures that should be developed as networks for cultural, historic and ecologically significant areas.

Jongman defines greenways as "a passage for people and their access to the countryside, adding the function of linkage between the urban and rural American landscape" (2004, 3). His definition of a greenway helps us to understand the connection and interaction of people and the landscape. His definition suggests that greenways are for human use but also has ecological purposes. Greenways are significant for multiple purposes; land protection and conservation, wildlife management, and recreation. Jongman stresses that comprehensive greenway design includes ecological, recreational and cultural aspects. (Jongman, 2004)

Charles Flink and Robert Searns offer: "greenway is a generic term for wide variety of linear open spaces that provide connections and thereby foster movement of some sort, from neighborhood bicycle routes to pristine wild land corridors that guide migrating wildlife in their seasonal travels; from revitalized urban waterfronts to tree shaded footpaths along a stream, far from the city".(Charles Flink and Robert Searns,

1993, XV) Flink and Searns refer to Charles Little's definition of a greenway as being the most comprehensive. It is clear that movement and connections are an important part of greenway design especially since some greenways follow waterways, foot paths, caravan and train paths that link different regions and diverse populations.

Based on an analysis of greenway definitions it is clear that most authors generally agree that a greenway is a linear chain or network of various resources. For the fragmented region of this project the use of a greenway could be very effective at linking these resources. This greenway project would include many of the aspects of greenways defined above, such as cultural, natural, historical and recreational resources. The definition of greenways as "linear" structures supports the project idea of linking resources distributed along the Caspian coast.

History of concept

Hellmund and Smith (2006, 26) identifies the person who started and developed the concept of "linear green space" in the 1860's as American Landscape Architect Frederic Law Olmsted. Olmsted's main reason for the creation of green networks in America was to provide recreational opportunities for people in polluted and crowded cities. A few early examples of Olmsted's greenways include; Prospect Park in Brooklyn with proposed parkways to Coney Island and Eastern Parkway and Boston's Emerald Necklace. The parkway system was developed later by Robert Moses. Initially his idea was to create "recreational networks" to connect existing parks together for the people of New York (Little, 14) Later, his ideas were used mainly for highway construction. American regional planner Benton McKaye (who proposed the Appalachian Trail in 1921) combined the greenbelt concept with the early parkway system idea and the creation of urban open space. In 1969, Ian McHarg developed an important method of landscape assessment now known as the overlay method. He described the whole process in his book "Designing with Nature". The basic goal of the overlay method was to catalog the various resources in an area and superimpose them on a map to indicate where important resources overlap, and thereby identify critical areas for protection. (Hellmund and Smith, 2006)

Little identifies Philip Lewis for his contribution to the development of the greenway concept. Philip Lewis was the Director of the University of Wisconsin

Environmental Awareness Center. He developed a unique method of landscape analysis. In his analysis he identified over 200 landscape types. Through this analysis Philip Lewis determined that a large percentage of the natural resources were located around waterways or areas with significant topographic change. These water ways and ridge lines he identified as "environmental corridors" or "e-ways". He used his analysis method and his e-way ideas to identify important landscapes in Wisconsin and Illinois which provided a basis for developing state trails (Hellmund and Smith, 2006).

Internationally, modern greenway planning has used different approaches around the world. (Fabos, Ryan, 2004) The idea of green-belts and green networks across Europe emerged at the beginning of 20th century. An ecological network is the name for greenways in Europe. (Jongman, 2004) European Greenway definition is different from what we have in United States:

"Greenways are communication routes reserved exclusively for non-motorized journeys, developed in an integrated manner which enhances both the environment and quality of life of the surrounding area. These routes should meet satisfactory standards of width, gradient and surface condition to ensure that they are both user-friendly and low-risk for users of all abilities." (Lille Declaration, European Greenways Association, 12th September 2000).

All Central European Greenways are implemented according to the following principles:

1).Supporting and mobilizing local communities – encouraging local enterprise, creating jobs and additional revenue streams, restoring and protecting traditional vocations;

2).Natural and cultural heritage conservation and landscape protection;

3).Using local resources – accommodation and food, tourist services, guides and local products;

4).Cooperation between countries, regions, towns, villages and their inhabitants;

5).Helping local communities discover and strengthen their cultural and social identity, improving conditions and quality of life;

6).Providing information and opportunities for tourists to help them better understand the region, its challenges and local initiatives, activities, organizations;

7).Promoting non-motorized transport and environmentally-friendly tourism, recreation and sport;

8).Creating opportunities in urban areas for use of more sustainable forms of transport to help people move about on foot, by bicycle or by public transport instead of using their own car;

9).Encouraging people to be mobile, to improve their health and safety when travelling and to undertake active forms of recreation.

European Greenways defined as the natural and cultural heritage trails and have four basic functions:

1. Sustainable transport and safety

2. Promoting healthy lifestyles

3. Development of eco-tourism and natural and cultural heritage conservation

4. Supporting economic and social development of communities, including enterprise development

The Green Belt of Moscow is an early example (1930) of an international greenway in Russia. It consists of a ring of open space and parks around Moscow that was developed to provide fresh air and an area of recreation for the residents of the city. By 1935 it was 50km from the city center. By 1960 it was expanded and located 40 km from the city center. All parks and open spaces were located just outside of the city and used to separate the suburban and urban areas.

European Greenway Associations are an example of large scale greenway planning efforts. The Vienna to Prague greenway is one of most visited in Europe. The greenway is comprised of a network of 100-year-old hiking trails between “Prague,

Tábor, Jindřichův Hradec, Slavonice, Znojmo, Lednice-Valtice and Vienna". For more information on this greenway, please review the case study in chapter three.

A significant part of greenway activities are still mostly concentrated in North America. (Fabos, Ryan, 2004)

One great example of greenway planning in the United States is the New England Greenway Vision Plan, which focused on the development of greenways in the six New England States and linkages between open spaces. To make these "critical connections" the project proposed:

- For 19,300 miles of greenway trails to be developed for the green network of New England
- For the protection of 8 million additional acres of open space
- For creating greenway legislation

The strategy used to envision the greenway plan by the students at University of Massachusetts at Amherst is useful for the Caspian Coastal Greenway Plan. The five step process that was used includes; mapping the existing greenways, mapping of current planning initiatives, the identification of connections between states, the creation of only small plans and the combination of all this information into a comprehensive greenway plan for each state and whole plan for the entire region. This strategy is useful to know and learn how people approach greenway planning on larger scale.

Jongman 2006 (p.307), defined difference in two landscape science traditions; "Anglo American tradition has concentrated on vertical (chorological) processes in the landscape, whereas the German and Eastern tradition have concentrated more on the horizontal (topological) and regional aspects for physical planning". Jongman describes that chorological processes means "the study of the causal relations between geographical phenomena occurring within a particular region". The goal of the chorological point of view is to know the character of regions and places "through comprehension of the existence together and interrelations among different realms of reality and their varied manifestations, and to comprehend the earth surface as a whole in its actual arrangement in continents, larger and smaller regions, and places."

(Jongman, 2006) The topological processes depend on the" way places are connected together". Topology rules are particularly important within GIS, and are used for a variety of correction and analytical procedures. Principles of connectivity associated with topology lead to applications in hydrology and urban planning as well as other fields. Both of the traditions have their own unique ways to study and analyze the landscape.

The greenway concept in Russia emerged and developed at about the same time as in Europe. One of the most successful attempts at biodiversity conservation in Russia and the Former Soviet Union was the establishment of an extensive network of protected natural areas. Due to the planned communist economy during Soviet time in Russia, there was significant landscape system damage and destruction. (Jongman, 2004) One of the significant large scale plans of green networks across Russia was during Stalin's time, starting in 1948. Green belts were added along highways and open spaces to reduce erosion, limit wind damage on crops and to a certain extent for beautification. Green belts were comprised mainly of oak trees and were planted over a period of 15 years within a territory of 4 million hectares (9884215.258 acres) and more than 5 thousand kilometers (3106.855 mi).

In 1974 the Russian geographer Rodoman introduced the concept of "uniting all natural zones into one coherent network." (Jongman, 2004, 307) According to the Moscow Biodiversity Conservation Center of Russia, as of spring 1998, Russia had 98 Zapovedniki (protected open spaces) and 32 national parks. The Zapovedniki encompass a total area of over 75 million acres, or 1.4% of the Russian territory. National parks cover about 16 million acres, less than one-half percent of Russia. At a regional level Zakazniki (managed resource area) and natural monuments number over one thousand and cover up to 4% of the country's territory. (http://www.biodiversity.ru)

Jongman, states that there is a lot of potential in green network development across the European countries (2004). He defines some of the challenges in the Russian situation, such as the large scale natural areas and the diversity of administration in different regions. Jongman states that one important aspect for greenway development is cross-border cooperation and public involvement. (Jongman, 2004, 316) Russia's regional structure is very complicated. There are semi-autonomous republics located adjacent to standard Russian provinces with different political structures, management

and land use policies. Erickson and Louisse stress the importance of collaboration between stakeholders and across jurisdictional boundaries. They state that a major strategy of greenway planning is stakeholder collaboration. Involving all stakeholders in the process is very important and may increase the projects chance for success. This is especially true when a greenway passes through multiple jurisdictions and includes many interested parties (Erickson and Louisse, 1997).

After reviewing greenway literature it is clear that the greenway concept has been present for over a hundred years and has been successfully implemented all over the world. The experience of past professionals in developing greenways will help us avoid conflicts and challenges that have been already identified. For the Caspian Coastal greenway it is especially important to learn from previous examples of collaboration and identify the steps needed to develop a regional greenway.

Greenway types

It is clear that greenways can be represented in many different categories, but on the other hand, one greenway can contain aspects of multiple greenway types. This is very important for greenway development because it helps to serve multiple purposes. Flink and Searns reinforce this by stating: **"**While categorizing greenways helps us to understand the different forms they may take in reality, types blend and overlap (Flink and Searns, XVI, 1993)." Flink and Searns go on to state that "any one greenway can hold many and varied values to those who use it or live nearby (Flink and Searns, XVI, 1993)." Different types and different patterns of landscapes require different greenway treatments. Designers should be careful when they are planning a greenway including multiple types in one. Most of publications identify three distinct categories of greenways; the ecological greenway, the recreational greenway and the cultural or historic greenway.

Fabos provides a comprehensive overview of greenway types and highlights three major types of greenways:

> "#1) Greenways of ecologically significant corridors and natural systems: mostly along rivers, coastal areas and ridgelines; to maintain biodiversity and to provide

> for wildlife migration and appropriate nature studies.
> #2) Recreational greenways: where networks of trails and water link land and water-based recreational sites and areas; trails and routes often have scenic quality as they pass through diverse and visually significant landscapes. The recreation focus may be on urban or rural areas and the scale may be local, regional, national or international.
> #3) Greenways with historical heritage and cultural values: to attract tourists and to provide recreational, educational, scenic and economic benefits" (Fabos 1995, 5)

Little has broken greenway types down to five types, including urban river side, recreational, ecological significant, scenic/historic routes and comprehensive greenway system greenways.

Urban river side greenways are often used to protect or redevelop the area along polluted and underutilized waterways in urban environments.

Recreational greenways, in most cases, are oriented around trails or paths and are often long distance. They are based on corridors usually man-made. Old rail beds and canals can be used as recreational greenways.

Ecological natural corridors go along rivers and streams, ridgelines, or other linear natural resources. These corridors provide for human needs as well as the needs of different species in the area. These greenways are used to connect important habitat areas.

Scenic and historic heritage greenways usually follow a scenic road, canal or other linear corridor with historical and cultural significance. (Little 1990). These types of greenways are typically car oriented; however successful implementation will seek to include pedestrian access.

Comprehensive greenways can either be developed around a natural landform such as ridgeline or valley, or it can just be a chain of open spaces connected by various methods.

Little and Fabos describe greenway types differently, but both agree on the different types of benefits provided by all greenways. Even though there may be other types of greenways, most authors refer to either Little or Fabos for the types of greenways. Their definitions encompass all known types of greenways. These types of greenways will help this project to develop a comprehensive greenway vision for the Caspian Coastal greenway.

Greenway benefits

People create greenways because they provide contributions to the society and environment. Many authors describe the advantages of greenways. Environmental benefits of greenway are very important in many ways. Greenway helps to maintain a more sustainable level of biodiversity and species flow, through preservation of lands. (Ahern, 1995)

Ahern states that the strongest argument: "is based on their potential role in ameliorating the negative effects of landscape fragmentation. This argument is based on the benefits of connectivity."(Ahern, 1995, 136)

In the following statement, Fabos highlights the protection of valuable resources and connectivity as an important benefit of greenways. "As linear corridors of green space, greenways have the capability to connect communities and protect important historical, cultural, ecological and recreational resources within a region" (Fabos, 1995).

Jongman and Pungetti also support that connectivity and corridors are extremely important especially in today's fragmented landscapes. They comment that the urbanization of the country and the development of the rural landscape will have "major impacts on biodiversity" and will cause "detrimental changes to ecosystem processes and functions" (Jongman, Pungetti 2004 XV). Their main argument is that "greenways, ecological networks, landscape linkages and corridors represent an important and critical

step in the application of landscape ecology to landscape planning for conservation of biodiversity" (Jongman, Pungetti 2004 XVI).

Hellmund and Smith discuss the broad benefits of greenway functions. The benefits include social, recreational, beauty, historic preservation, economic development and ecological. They also state that "Greenways are sometimes presented as a component of sustainable landscapes and communities, something good for the environment. (Hellmund Smith, 23, 2006). Social and cultural benefits of greenways are significant. Greenways offer opportunities of connecting diverse neighborhoods and helping to encourage positive social interaction. (Hellmund and Smith 2006, 18) Greenways can: " create jobs, enhance property values, expand local businesses, attract new or relocating businesses, increase local tax revenues, decrease local government expenditures, and promote local community"(Hellmund and Smith 2006, 20)

Flink and Searns also state that greenways help to improve the life of people living near a greenway; "by creating greenways, local governments can make a true contribution to the quality of life within their communities for a relatively low cost" (Flink and Searns, XVII)

Little emphasizes the practical benefits of greenways. For example, he states that the "positive economic effects of a greenway corridor arise because of an increase in the value of taxable properties adjacent to the greenway" (Little, 185, 1990). In areas where old rail beds have been converted to a greenway, the property values will go up. Traditionally the presence of a rail bed would bring property values down; redeveloping the corridor as a greenway will have the reverse effect.

The reviewed literature has shown that there is a tremendous number of benefits related to greenway development. For this vision plan, all of the reviewed benefits are important, but primarily for the Caspian Coastal area linkage and economic development, social and cultural benefits are the most significant.

Greenway design and planning

Greenways, due to their size, scope, the presence of multiple stakeholders, the complexity of the planning and design process and other outside factors, are very difficult and time consuming. For example Flink and Searns warn that "the greenway process can be long, taxing and at times frustrating."(Flink and Searns, 15).

Flink and Searns describe how to successfully develop a greenway plan. They go on to say that there are three stages to greenway planning; inventory and analysis, preparation of concept plan and preparation of final master plan. The inventory and analysis focuses on identifying the cultural and natural resources of the region. The concept plan is used to develop goals and objectives to guide the project through development. The master plan is used to identify specific project elements such as lands identified for acquisition, facility development plans and funding. Flink and Searns also advise that each of these stages can be broken down into more detailed steps depending on the project.

Hellmund and Smith (2006, 216) offer five stage greenway design method. The authors approach to greenway planning and design is broad and flexible.

The five stages offered by Hellmund and Smith:

1) Identifying Potential Issues, Stakeholders, and Preliminary Goals
   The first stage helps get better understanding of region, its resources and people. It also identifies the scope of work.

2) Defining a Broad Region to Study
   Assessment and preliminary analysis of the area to develop a preliminary greenway design

3) Selecting Nodes and Swaths
   Focus shifts on a smaller, more detailed scale, called the "swath." One or more swaths can be identified for further analysis.

4) Selecting Alternative Alignments and Setting Widths
   Focus on a more specified region within the swath and identify a preliminary greenway alignment.

5) Implementing and Managing
   The last part of the greenway development process includes the fundraising, partnership building and finally construction of the greenway.

Hellmund and Smith (2006) offered an effective method for organizing the development of a greenway project.

One process that is effective for planning greenways was developed by Jack Ahern (1995). The process he developed is called the "Framework Method for Landscape Ecological Planning, a continuous participatory and interdisciplinary process."

The first step is to develop landscape planning goals and assessments for abiotic, biotic and cultural resources within the study area. These assessments should then be analyzed to determine the "spatial compatibility and conflicts" (Ahern 1995).

The next step is to develop planning strategies based on the resources of the region. Ahern developed a set of planning strategies consisting of offensive, defensive, protective and opportunistic strategies. Ahern comments that all strategies are "proactive and based on a plan". (Ahern, 1995)

The protective approach is used in areas where the existing situation is good enough and the goal is to support and maintain it. The defensive strategy will be used in a landscape that are fragmented and has main areas that is shrinking and isolated. The goal of this approach is to stop or slow the fragmentation and isolation of patches, nodes and corridors of resources. The offensive strategy brings nature back to overused landscapes. The opportunistic approach is used when there are special targets for protection.

After a strategy has been identified the next phase is developing a scenario for the project. According to Ahern, the "mapped assessments of biotic, abiotic and cultural resources, identifies patterns of compatibility or conflict and provides a basis for the design of spatial concepts" (Ahern 1995). Ahern uses an example in Orange Massachusetts. For this project there were three scenarios developed: the biodiversity scenario, recreation scenario and the citizen's scenario. The next step of Aherns' method was to evaluate these different scenarios and develop a final landscape plan.

Ryan, Fabos and Allan (2006) also identified strategies for successful greenway development. They highlight the importance of development and the use of a clear vision

plan for the project that would encourage and insure public involvement and active participation. Their study emphasized how important a vision statement can be to unite the often diverse groups involved in the greenway development. A greenway vision plans provide a structure for future project development and also helps to bring local support and involvement.

Due to the project scale, countries involved, and lack of available data, this project will combine the strategies above. The major strategy will be the one developed by Flink and Searns. An inventory of the resources in the area will be developed and a concept plan will be included for the study area. The Ryan, Fabos and Allan's strategy for the vision plan development. The project will also use steps one through three from Hellmund and Smith and defensive strategy from Ahern.

Conclusion:

The literature resources reviewed are excellent sources to better understanding how to plan, design and develop greenways. Many of the authors and practitioners concentrated on work in United States, and literature resources from other countries are very limited. According to the authors discussed above, greenways are very important for the society and ecology of a region. There will be challenges in implementing the plan because of different jurisdictions and territorial divisions, from semi-autonomous republics to regular Russian provinces.

This vision plan will create a broad plan for the future development of a greenway along the Caspian Sea. A greenway development in this area could protect and enhance the cultural, historic and natural resources of the area. It could also enhance the economic development of the region and bring international attention to the attractions in the region. It could help to make the region a very attractive tourist location as well as a place that local residents could enjoy.

Chapter 2: Project Development

A. Project Summary and Vision:

The purpose of this project is to develop a greenway vision plan for the Caspian Coastal Greenway that would go from Astrakhan city in Russia, to Rasht in Iran, passing through diverse landscapes, populations and jurisdictions. The project will identify existing protected landscapes and locate open spaces, cultural heritage landscapes and ecologically sensitive areas for future protection to create a continuous protected network. The plan will also make suggestions about future connections to other important regional corridors and to other greenway initiatives.

Vision:

In the future, a Caspian Coastal Greenway would provide numerous benefits to a large area. It would provide a commonality between different ethnic groups, citizens of different countries and people of diverse religions. A greenway could help to bring these different groups together for the common good of protecting, and enhancing the cultural, historic and natural resources of the region. The Caspian Coastal Greenway could also be used to help increase tourism, encourage investment in the region and help to improve the overall quality of life.

B. Goals and Objectives:

Goals:

The goal of this project is to develop a conceptual greenway plan for the Caspian Coastal region that will help lead to the development of a large scale multinational Greenway System in the future. The Caspian Coastal Greenway system will be located along the shore line of the Caspian Sea with the Caucasus Mountains on its west side. It will run along the Old Volga Trade Route from the city of Astrakhan on the North (Russia) through Baku (Azerbaijan) to Rasht (Iran). The proposed section of the greenway will be concentrated on the area within the jurisdiction of the Russian Federation.

Objectives:

1) To identify primary corridors of land to serve as major linkages in the regional context. These major linkages will be critical to help connect protected lands (zapovedniki).

2) To locate major cultural and historical sites within the area to include in the greenway. The purpose will be to designate, revive and celebrate historical sites along the Old Volga Trade Route.

3) To use the corridors identified to help and encourage local agencies and communities to locate other cultural and historic sites located away from the primary greenway corridor. This will help to include other significant features in the overall system.

4) To develop integration schemes for future collaboration in region.

5) To encourage sustainable/eco - tourism and economic development within the region

6) To provide a broad regional concept to local communities and governments

Methods:

1) Assessment of Social, Historic, Cultural and Natural Features

The first step to develop this project will be to review all of the resources in the region and study what analysis have been done in the past.

2) Identify existing fragmented resource corridors

Although the focus of this project is on the area along the Caspian coast, it is important to identify locations of other resources located away from the coast. These corridors could somehow be combined as part of the overall greenway plan.

3) Identify linkages between communities, historic sites, nature reserves

After locating the resources and protected open spaces, conceptual connections will be identified to link these resources. Developing a continuous greenway trail will be the final goal.

4) Identify greenway route based on linkages

This project will identify a conceptual greenway route based on the linkages identified. Due to the scale and complexity of the region, the precise location of the greenway trail will need to be determined later after more in depth studies.

5) Develop maps for the regional greenway

The maps for the regional greenway will be a collection of resource maps and an overlay analysis map. The analysis map will combine many of the important resources on one map to identify resource corridors and critical areas for protection.

6) Develop Greenway Vision for the Region

An important part of starting the greenway development process in the Caspian Coastal region is to develop a conceptual greenway vision plan. This vision plan will broadly identify a greenway path while showing connections to surrounding resources. Ideally the vision plan will highlight some of the most striking resources in the area and spark interest in the area. This will hopefully be the catalyst in continuing the greenway development process.

Chapter 3: Related Project Studies

A. Prague-Vienna Greenway:

European Greenway Associations are an example of large scale greenway planning efforts. The Prague to Vienna Greenway is an excellent result of large scale European Greenway planning. The Prague to Vienna greenway started as a grass roots effort that lead to the development of a 250-350 mile long network of trails that connect Prague and Vienna. Instead of a straight line between the two destinations, the trail uses trails and country roads to "offer variation and diversity to the traveler." Members of the Prague-Vienna Greenway Association (PVGW) have also developed a number of loop greenways that connect the main artery of the greenway to other interesting areas in the countryside. http://www.pragueviennagreenways.org/gw.html

Some of the local loop trails connecting to the Prague-Vienna greenway, include:

- The Rosenberg Family Greenway
- The Crafts Greenway which highlights major weaving, black smithing and other workshops
- The Liechtenstein family Trail in South Moravia/Weinviertel, which connects major historic sites
- Other loops include Grasel trail near Slavonice, Trail of Jewish painter Nagl near Telč, Devil´s Load *(*Čertovo břemeno) Greenway near Sedlec-Prčice/Tábor in Czech Merano or Heritage Trails in Nove Hrady mountains in South Bohemia.

The Prague-Vienna greenway was developed after the revolution of 1989 in response to concerns about the effects that rapid economic development may have on the surrounding countryside and important architectural monuments. A non-profit group called the Greenways/Zelene stezky (GWZS) was formed in 1992 with the goal of developing a greenway. The group used methods developed by the The Hudson River Valley Greenway, to direct their efforts. They "created a partnership of twelve mayors and their towns, inspired and supported the grass-roots initiatives."

The resulting greenway passes through and protects a wide variety of important ecological and historic areas. The greenway passes through several UNESCO Biosphere reserves and protected landscapes as well as a wide range of landscape types such as forests, wetlands, steppes and pastures. The areas contain rare bird species, wild game animals, rare alpine wildflowers and other vegetation. The greenway attracts people not only for its recreational opportunities; it also has a lot of cultural and historical events. The greenway is known as the "Culture trail connecting Central Europe" (http://www.oevv-egwo.org) Visitors can walk or bike between historic towns and villages, visit romantic castles, medieval churches and monasteries, discover old Jewish sites and savor some of the most picturesque countryside in Europe. Visitors encounter magnificent castles, palaces and a wide range of architectural styles in the region.

The Prague-Vienna Greenway is currently managed by the Civic Association Prague-Vienna Greenways. Key partners in developing and promoting the route along with the Greenways-Zelene Stezky Program, are the Friends of the Czech Greenways in New York, as well as the Greenways Travel Club, a local commercial tour operator.

The development of the Prague-Vienna greenway can help serve as a model for the development of the Caspian Coastal Greenway. It illustrates that with a group of highly dedicated volunteers and local political support, a large scale greenway and green network is possible. It is also an excellent example of a group using not only trails, but country roads as well to connect various parts of the greenway with other resources located off to each side of the main artery. The Prague-Vienna Greenway is an important example of international collaboration and cooperation between non-governmental and official organizations.

B. Belarus Greenway - The Horse Trails of Igumeny:

The Belarus Greenway is a large network of local greenways within Belarus. The Horse Trails of Igumeny is one of the pieces of the larger network. It is an excellent example of a regional greenway loop trail that has been used to connect to various cultural and historic resources. The goal of the Horse Trails of Igumeny was to integrate the "natural, historical and cultural attractions with community-based initiatives related to green tourism, environmental education, as well as Belarusian traditional crafts and

folklore (www.greenway.by)." There are on going efforts to connect the Belarus greenway network to European Greenways.

This greenway trail is comprised mainly of 20km of horse trails however there is also a network of local walking trails connected to the main trail. Along the trail there are numerous tourist attractions that highlight the culture and traditions of the region. Some attractions include workshops and expositions that focus on various different topics. Some of the attractions are called:

What kind of honey?

Taste as many as 15 different kinds of honey and other bee products with specialists from the apiary in Agricultural College in Smilovichi Village.

We are Belarusians

Participate in workshops of traditional Belarusian crafts, such as embroidery, tapestry, objects made of straw, bark and leather with teachers from the Children's Learning Center in Smilovichi Village.

Old Belarusian tools and traditional weaving in Ivanichi Village

Visit an exposition of traditional tools used in everyday Belorussian life collected by a local enthusiast. Learn how to weave with straw like our great grandmothers and how to use a weaving machine in the Ivanichi Village Folklore Centre.

"Vecharnitsa" in Ivanichi Village

Attend a concert of local traditional songs performed by the "Vecharnitsa" folklore group.

"Nochnoe" Horse Grazing

Take part in an ancient Slav tradition of grazing horses at night with Natalja Shilina, owner of the 'Konnyj Folvark'.

Source: www.greenways.by

The Belarus Greenway Network and The Horse Trails of Igumeny in particular provide an excellent template for the development of local greenway loops within individual republics in the Caspian Coastal region. It illustrates how the local greenway initiatives can be used to display local culture and history while being part of a larger, more significant greenway network. The use of culture, history and tradition within the greenway is also an excellent template for the Caspian Coastal region. It shows how local attractions can be protected while encouraging tourism and increasing local economic development.

Chapter 4: Caspian Coastal Territory and Assessment

A. Overview of Republics Within Study Region:

The territory along the west shore of Caspian Sea is comprised of three countries: the Russian Federation, Azerbaijan and Iran. Within the Russian territory the coast line of the Caspian Sea crosses through three distinct regions; the Astrakhan oblast (regular Russian province), Kalmyk Republic (semi-autonomous region) and Dagestan Republic (semi-autonomous region). (See Silk Road System: Volga Trade Route Map Fig. 2, Topographical Map For Caspian Coastal Region Fig. 3, Natural Recourses Within Caspian Region Fig. 4, Major Cities Map Fig. 5)

Astrakhan Oblast

The city of Astrakhan (See Major Cities Map Fig. 5) is one of the oldest in the southern part of the Russian Federation. The city is situated in the delta of the Volga River and was once the capital of Khazar Horde in 8th century (See Cultural/Historic Map Fig.7) and later as the major city in Golden Horde. In 1556 Ivan the Terrible conquered Astrakhan and from that time the city became a major trade center that connected Russia with the Middle East.

Astrakhan city has many significant historical sites such as: the old fort (Kremlin), several Orthodox churches and mosques. Next to the city there is a Buddhist temple (See Cultural/Historic Map Fig. 7) that was built as a memorial for the Kalmyk's who participated in the War of 1812.

Astrakhan oblast is the territory surrounding, and named after, the city of Astrakhan. Although Astrakhan city is ancient, Astrakhan oblast was created much later in 1717 at the southern frontier of Russian Empire. Astrakhan oblast has about one million inhabitants. Although the majority of the population (60 %) is ethnic Russian, there are 24 different ethnic groups total that live in the area. (www.astrakhan.ru)

The landscape of Astrakhan oblast is primarily flat (See Topographical Map Fig. 3) with a high number of wetlands. Astrakhan oblast has a Nature Reserve (See Nature

Reserves in Astrakan Oblast Map Fig. 11) that was founded in 1919 and is comprised of an area of 66.8 thousand hectares. It has three parts: the western Damchikski, the central Trekhizibinski, and the eastern Obzhorovski. The Nature Reserve occupies the lower part of the Volga delta and areas of shoreline along the Caspian Sea. The landscape within the reserve includes channels, creeks, alluvial islands, shallow lakes and bays or "kultuks". The territory of the reserve represents a transformation zone between the delta and the fore-delta with the freshwater wetlands and riverside forests. The Nature Reserve, situated on the crossroad of the migration route of many birds, it is home to unique flora, wildlife and fish.

In 1976 the Nature Reserve was included in a list of wetland areas of international significance by the Ramsar Convention. (See Protected Areas & Ramsar Designated Sites Map Fig.15) The Convention on Wetlands (Ramsar, Iran, 1971) called the "Ramsar Convention" is an intergovernmental treaty that unifies the commitments of its member countries to identify wetlands of international importance and to maintain the health and ecological character of these wetlands. The Convention also plans for the “wise use” or sustainable use, of all of the wetlands within their territories. Unlike the other global environmental conventions, Ramsar is not affiliated with the United Nations system. Ramsar's main objective is to “develop and maintain an international network of wetlands which are important for the conservation of global biological diversity and for sustaining human life through the maintenance of their ecosystem components, processes and benefits.”(http://www.ramsar.org) Since the Nature Reserve was included on the Ramsar list, it is clear that the area contains some of the most biologically significant wetlands in the world.

The Volga delta is famous for the lotus fields that attract many visitors. Astrakhan oblast has about 200 kilometers (124 miles) of shore line. Astrakhan oblast is located along a major railroad transportation route that runs south all the way through Kalmykia and Dagestan to the Azerbaijan capital of Baku and North to all the way to Moscow. (http://www.sevin.ru/natreserves/) (See Major Transportation Routes of Caspian Region Map Fig.8) Astrakhan oblast has old towns along the Caspian Sea such as Harabali, Zamiany, Zenzely and all of them have important historical and cultural heritage sites.

The Kalmyk Republic

The Kalmyk Republic (See the Major Cities Map Fig.5) is situated south from Astrakhan oblast and north from Dagestan Republic. The population of the republic is 300,000 with mainly Kalmyks. A small portion of the population is made up of ethnic Russians, Chechens and Dargins. Although the Kalmyk territory originally had a significant number of historical sites there is not much still intact after the genocide which occurred from 1943-1960. During that period, anything related to the Kalmyk cultural heritage was systematically destroyed by the Soviet government. After the Soviet Union dissolution, many of the culturally important sites were rebuilt with most of them being Buddhist temples (since a majority of the people are Buddhists). Several of the great historical crossroads such as the Silk Road went through the territory of Kalmykia. There are a number of important historical sites along the Silk Road within Kalmykia. There are numerous tombs and burial areas, the remains of Khazar (a semi-nomadic Turkic people) dwellings, the location of cities belonging to the Golden Horde and the remains of Sarai Berke, the second capital of the Golden Horde.

Kalmykia has unique natural monuments and natural reserves with rich flora and rare birds. The most protected areas are the Nature Reserves or "Black lands" situated in the territory of Chernozemelsky and Yashkul regions.(See Nature Reserves in Kalmykia Map Fig.12) The nature reserve was established in 1990 and is comprised of 121 thousand hectares. The Nature Reserve is situated in the North-West of the Caspian lowland and includes Manych Gudilo Lake which is also designated on the Ramsar List of Wetlands of International Importance. The Natural Reserve includes temperate grasslands, cold winter deserts and semi-deserts.

Apart from the Nature Reserve there are 14 other Natural Reserves in Kalmykia. The largest federal Nature Reserves are Sarpinski, Kharbinski and Mekletinski, they are oriented mostly to the preservation of saiga antelopes (goat like antelopes) and rear steppe birds. These areas occupy over 20% of the republic's territory.(www.kalm.ru) Kharbinski and Mekletinski Nature reserves are along the coast line of the Caspian Sea.

Kalmykia has Lagan Township along the Caspian Sea. It is a port and major town in the eastern part of Kalmykia.

There are major transportation corridors that run throughout Kalmykia and connect Northern Caucasus with Russian provinces.(See Transportation Map Fig.8) One of them is along Caspian Sea. Kalmykia has about 150 kilometers (93 miles) of shoreline along the Caspian Sea.

The Republic of Dagestan

Dagestan Republic (See Major Cities Map Fig.5) is the largest region in Northern Caucasus, with a population of 2.5 million people. Dagestan is a very diverse area with 12 major ethnic groups and 40 other minor ethnic groups (sometimes number of them not more than 200 people) all of them belong to the complex family of indigenous people in the mountains.

Dagestan has 400 kilometers (249miles) of Coast line on the Caspian Sea. All of the major cities in Dagestan are located along the coast line as well as the main transportation corridor highway and railroad that connect the capital of Dagestan Mahachkala with Moscow-Astrakhan and Baku.

Dagestan has a lot of historical sites along the shore line; one of them is known as the "Caspian Gates" or the city Derbent that was established in the 3rd century AD. The ancient city walls still remain in good condition. Dagestan is primarily agricultural but has a lot of mineral resources such as oil and natural gas.

The people of Dagestan are mainly Muslims. Historically, local art and craftsmen of Dagestan was very famous around Russia. Blacksmiths and carpet makers, wood carvers and pottery centers are located in small villages along the coast and products are usually sold along the main road, which runs from Baku to Moscow. Some villages for example Kubachi center of blacksmith dated back to 6th century. (www.wikipedia.org)

Dagestan has a number of nature reserves that are located on the northwestern Coast of the Caspian Sea.(See Nature Reserves in Dagestan Republic Map Fig.13) The nature reserves were designated by the government as the protected area of importance of wildlife, flora and fauna. The Dagestanski Nature Reserve (designated in 1987) consist from two parts Kyzlyarski and Sarykymski, with total area of 19.1 hectares including sea zone of 9.3 thousand hectares. The Agrahanski Nature Reserve (designated in 1983) with total area of 39 thousand hectares important area for wildlife habitat. The other Nature Reserve Samurski along the Coast of the Caspian Sea is next to the city of Derbent. It was designated in 1982 as an important area for the migration of wildlife and rare species such as the Caucasian black swan and wild boar as well as the lot of rare birds. The Nature Reserves of Dagestan is home for the unique biodiversity life and plants. Many of species are rear and in the Red Data Book of Russian Federation. Natural Reserves of Dagestan has a number of natural monuments such as: the only subtropical liana forest in the estuary of Samur River, Sulak Canyon, that is 2000 meter deep, "eqilian town" natural landform area. (http://www.sevin.ru/natreserves/)

Dagestan is divided into three parts, the lowland, highland and the foothills. The lowlands are on the northern side of Dagestan along the Caspian Sea. The highlands are on the western side and foothills are on the southern side along the Caspian shore. The major developments of Dagestan are along the shore of Caspian Sea, where major cities are concentrated and where the Moscow -Baku highway runs. The rest of the area is mainly highlands with very rugged roads and is barely accessible.

B. Assessment of Regional Resources:

Transportation:

Historically the shore line was always active as a trade route between multinational communities that were scattered across the Caspian shoreline. In ancient times it was branch of the Silk Road and the Old Volga Trade Route. The Old Volga Route was established by the Varangians around the 9th century and connected Northern Europe and Northwest Russia with the Caspian Sea and Muslim countries and went as far as Bagdad (present Iraq). (Wikipedia.org)(See Silk Road System: Volga Trade Route

Map Fig. 2) At the present time, the Russian Federation understands the importance of trade with the Middle East. A Federal Program called "North-South" was launched in 2000. The program was devised to increasing trade and economical activity between the territories of Astrakhan oblast, Kalmyk Republic, Dagestan Republic and Azerbaijan, Iran and India. The existing transportation corridor connects the area to Mumbai in India and helps increase the delivery speed between India, Iran, Azerbaijan and Russia. (673, Laws and Orders of Government of Russian Federations, 2000) It is clear that the coast line of the Caspian Sea serves as an important transportation corridor from ancient times up to now.

History and Culture:

The territory has a number of significant cultural and historical sites along the Caspian shore, such as the city of Astrakhan, the ruins of Mongol city Sarai, the city of Derbent, Baku (Azerbajan), Hyrkania, Rasht (Northern Iran). All these cultural sites in old times were part of the whole system that linked and functioned along the Silk Road now become fragmented.

There is a lot of ethnic, cultural and linguistic diversity in the region. While traveling throughout the territory only the Russian Federation has a large amount of cultural diversity.

There is tremendous diversity linguistically and culturally along the Caspian Sea due in large part to the varied landscape of the region. The rugged mountains isolated many ethnic groups and this brought the phenomena of language diversity along the Western Caspian shore line. (See Ethnicities of Caspian Region Map Fig.6) Within the region there are numerous ethnic groups with unique languages, traditions and customs, creating a very diverse and complicated area.

There are many distinct regions in the area with their own specific trades. Even within one republic, there is great diversity in trades and professions. For example, in the mountains of Dagestan there are goldsmiths in Kubachi, silversmiths in Gocatl, woodcarvers in Untsukul, potters in Balhar, tight rope walkers in Tsovkra and carpet

makers in Kurah (www.wikipedia.org). There are also villages of tinsmiths, boot makers, dancers, and singers. Also, in some parts of the Dagestan Republic people make a living in agriculture (primarily on hillside terraces) and stock raising (primarily sheep) (www.wikipedia.org). Despite the harsh environment and steep terrain, highlander groups have successfully farmed over many centuries. On the planes of the region and within the Volga delta there is mostly a nomadic life style, less permanent settlements and only a small amount of agriculture. There are urban developments as well and are located based on the history, pattern and lifestyle of the ethnic groups. The major cities were primarily founded in ancient times at important points along the trade route.(See Major Cities Map Fig.5) The oldest cities are Derbent, Baku, Astarkhan and Rasht and they are also the major population centers. (See Major Population Centers Map Fig.9)

Historic Trade Routes

The western shore of the Caspian Sea is important for its natural resources and also for its location at the junction of two major historic trade routes known as the Volga Trade Route and the Silk Road System. The Volga Trade Route served as the backbone for the Caspian region in ancient times. It linked to the Silk Road and connected all of Europe to the Middle East and China. The two major trade routes were important paths for cultural, commercial and technological exchange between traders, peoples of different languages, nomads and urban dwellers. The people in the Caspian region used the Volga Trade Route for trade, and migration as early as the 3rd century BC. People in ancient times built numerous burial mounds along this main migration route. These burial mounds marked the location of important leaders and many of them have become important archeological sites and still serve as well known landmarks in the wide open steppes. (See Silk Road System: Volga Trade Route Map Fig. 2)

Topography:

The Western Coast line of the Caspian Sea is shared by the Russian Federation, Azerbaijan and Iran. The topography of the territory reviewed varies greatly; starting from flat, semi desert planes and steppes on the north at the Volga delta to rigid Caucasus Mountains in middle section to the south. There is a distinct flat shore line with wetlands

that create a very unique environment and bio resource. (See Topographical Map For Caspian Coastal Region Fig.3)

Environment and Natural resources:

The territory reviewed is comprised of a cold, continental semi desert and grassland region on the north to a warmer mixed mountain and highland region in the middle and to the south. The Caspian shore region has a unique network of ecosystems. Coastal shore wetlands are significant for the large variety of bird life, rear species of flora and fauna. The Caspian aquatic biodiversity is vast and distinct due to its long time in isolation. With a number of pristine intact habitat regions, the area has tremendous potential for eco-tourism.

There are a number of nature reserves in Astrakan Oblast, Kalmykia and Dagestan (See Protected Areas & Ramsar Designated Sites Map Fig.15). Although these areas protect several critical environments, the majority of the coast line is currently not protected. The vegetation, ecosystems and species along the shore are quite diverse and require protection. There are swamp forests, steppes, arid woodlands, semi deserts and deserts along the Caspian Sea. Scattered throughout the region are broadleaf forests, montane coniferous forests, and scrublands (See Forested Areas Map Fig.14). Although there is only a small amount of forested area along the Caspian coast, there are two major forest corridors connecting the coast to other important landscapes to the west.

The varied landscape types are home to a diverse array of animals including a number of rare and endangered species. These species include wild boar, raccoon dog, jungle cat, musk beaver, swamp beaver, European hare, fox, corsac fox, wolf, saiga antelope and hairy footed jerboa. The chart below highlights the very significant biodiversity in the region. The species in the "Red Book" are endangered and protected species within the Russian Federation.

Source: www.maps.grida.no

Biodiversity in the Caspian Sea: approximate numbers

Biota group	Total species in the Caspian Sea	Endemic species	Alien species	Listed species (Red Book)
Phytoplankton	441	17	6	?
Zooplankton	315	64+	7	10
Zoobenthos	380	190	12	20
Fishes	133	54	17	27
Marine and land mammals	125	1	3	41
Birds	466	?	?	63

Note: figures are approximate since the litterature does not agree on values.
Source: *Transboundary Diagnostic Analysis for the Caspian Sea*, The Caspian Environment Programme, 2002.

Source: www.maps.grida.no

There is also considerable important habitat around the river deltas. The most significant of them are the Volga River Delta, Samur River Delta, Terek River Delta. The habitat around the river deltas, as well as the areas important wetlands serve as a stopping area for migrating birds such as the mallard duck, diving ducks, gray goose, mute swan, coot and flamingos. More than 80% of these migrating birds nest in the nature reserves located along the Caspian coast (www.sevin.ru). Within the study area there is one wetland that has been listed as a Ramsar designated wetland and five that have been listed on the Ramsar shadow list. This illustrates how important many of the wetlands in the region are to biodiversity and species migration (See Protected Areas and Ramsar Designated Sites Map Fig.15).

The Caspian Region is also rich in energy resources, such as oil and natural gas. (See Natural Resources Map Fig.4) There were two refineries located in the region, one in Grozny and one in Baku (Azerbaijan) until 1996 when the Grozny refinery was

destroyed during the Russian Chechen War. Major industrial sites are mainly concentrated in the Azerbaijan.(See Major Industrial Centers Map Fig.10) Russian part of the territory is historically remained industrially undeveloped. There are only three hydro electro stations in Dagestan Mountains.

The territory reviewed has a lot of economic potential and is only in the beginning stage of full development. For example, oil reserves are estimated at about 35 million barrels while the United States reserves are 22 million barrels and the North Sea region has 17 million barrels. The region has tremendous amount of natural gas as well. (www.eia.gov United States Energy Information Administration) Since this area only has one functional refinery and a tremendous amount of oil and natural gas reserves, it is a prime area for future energy related development. In order for the resources to be extracted and the environment to remain in its current state there will have to be very careful planning and negotiating between the Russian government and the local Republic governments.

Local Governments and stakeholders:

There are some attempts amongst local governments for wildlife and open space preservation. For example in the Kalmyk Republic during 1995-2009 more land was protected to aid in the migration of the saiga (rare antelope). This year, the President of the Kalmyk Republic signed memorandum declaring 2010 as the year to protect the saiga. The Kalmyk Republic, Dagestan Republic and Astrakhan oblast signed a treaty for the protection of the wildlife corridors and to help develop eco-tourism in region.

There is an international organization called the Caspian Environmental Program that consists of representatives from different countries. This key collaboration between multiple countries conducted 225 surveys between 2001 and 2005 between stakeholders in Iran, Russia and Azerbaijan. The stakeholders ranked the following problems as the most important in their countries:

1. Reducing pollution in Caspian waters

2. Preservation of biodiversity

3. Improved fisheries

4. Sustainable economic development with environmental care

5. Protection from invasive species

6. Stronger civil society input into decision making

(http://www.caspianenvironment.org/newsite/PCU-Background.htm)

In present times we can see a strong awareness among local governments of the importance of protecting the environment in the Caspian region. The Caspian Environmental Program illustrates that local governments are looking for ways to cooperate in order to solve environmental problems for the entire region.

This greenway proposal, which seeks to unify the environmental protection effort in the entire region, can potentially help address the concerns of all of the local governments.

Potentially, the Ministry of Environment, Ministry of Tourism, Ministry of Resources, Agriculture and Fishing departments of the local governments will be directly interested in the Greenway development since it addresses so many different concerns in the region. If local communities can learn about all the benefits that a Greenway can offer, and provide support for the project, then there may be an excellent opportunity for the greenway to succeed. The development of a greenway would provide multiple benefits that would be attractive to most if not all of the parties involved.

The unique Caspian Coastal ecosystems need to be protected and included in a consistent Greenway plan that would not be constricted by political or ethnic borders. Wildlife migration patterns and the complex functioning of ecosystems cannot be contained by arbitrary, man-made borders. The greenway will link together all of the ecological systems of the region and connect Nature Reserves that are already present in different areas.

The Caspian Costal Region has a lot of potential for greenway development and will bring together fragmented pieces of culture, environment and economy.

Chapter 5: Caspian Coastal Greenway Plan and Final Scenario

A. Introduction

Why Use the Greenway Concept

There are numerous methods and strategies that could be used in the Caspian region to protect environmental, cultural and historic resources. The local goverments could work in their own areas to add to protected space, focusing on the most important habitat areas. They could also work to develop local historic commissions that could identify and protect important cultural landmarks and historic structures. Planning studies could be undertaken to direct future developments in areas where there will be reduced impact on the enviromnet. Along with this, zoning guidelines and bylaws could be developed to locate uses in suitable areas and ensure the character of an area stays intact. Each of these ideas could work on a local scale to protect individual resources one at a time.

Past studies within the region has focuses mainly on cataloging the environmental resources of the area. Many of them focus on individual territories and not the significance of these spaces on a regional level. Aside from cataloging the natural resources, the main discussion for the region has focused on the division of energy resources and the division of the Caspian Sea resources. None of the work found has proposed a plan to protect and link the natural resources of the area into a larger network. Also, the level of environmental protection in the region is often overlooked and should be considered one of the most important issues in the region.

These types of efforts and studies could be enhanced by using a greenway to link all of these resources physically or conceptually to achieve a larger goal. The Caspian Coastal region has a large number of diverse resources; from internationally significant wetlands to ancient archaeological sites. These resources are spread over a large area and no unifying element exists to combine them. The Caspian Coastal greenway would link many of these resources physically through the development of trails and also conceptually. The greenway could also enhance economic development and increase the prosperity of the region.

Threats:

The Caspian Coastal region is rich with resources however a very small percentage of the area is actually protected by reserves. There are numerous other areas, especially directly along the shore that are very significant landscapes. Also, most of the cultural and historic resources throughout the countryside are unprotected and are vulnerable to new development. Due to overgrazing and poor agriculture methods the area also has a signifcant desertification problem. This has led to large areas of land becoming almost unusable. When this happens farmers move to another location and use the same poor methods, therefore most likely continuing the spread of desertification. Also, the presence of large oil and natural gas reserves will encourage industrial development in the future. The development of extraction and refinery complexes in the area could greatly impact the environment and the visual character of the region.

Potential Greenway Users

A greenway in this region could serve multiple groups of users for a wide variety of uses. First off, the greenway trails would be for locals and their everyday needs. People of the area would use the trail for exercise purposes and to enjoy nature but also for social interaction and trade. The people of this area are highly social and are constantly traveling to visit family members, other clan members and other political and religious leaders. The greenway trail could serve not only as a transportation route for these people to travel by foot and bike but also as a meeting place and marketplace. At various points along the trail there could be community meeting areas and marketplaces that sell local goods. It would give the local people another place to meet and reconnect with relatives and friends while also increasing commerce.

The second major user of the trail would hopefully be tourists. One of the reasons to develop a greenway trail is to increase local economic development and tourism. Tourists could use the trail to enjoy the local sites and get a better understanding of the region. The greenway would also help connect these tourists to markets and trade centers where they could buy local specialty goods.

Past Regional Efforts

The development of a greenway along the Caspian coast would help to protect and enhance all the resources within the region. In the past, a lack of regional cooperation and conflicting laws and regulations throughout the Caspian Sea republics and countries has disrupted individual state efforts to protect important regional resources. Although it will be difficult to plan and develop a project of such large scope across an area as diverse as the Caspian coastal region, there is reason to believe that different groups can work together towards common goals.

In 1996 representatives from Iran and Russia met to discuss "Sustainable Development and international economic cooperation" (www.tehrantimes.com). During discussions they talked about: 1) The problems of the legal status and regime of the Caspian Sea, 2) Mutual relations between the coastal states in the Caspian Sea region.3) The strategic interests in the Caspian Sea.4) All issues relating to the Caspian Sea.5) The future cooperation among the Caspian coastal states (www.tehrantimes.com). Russia, Azerbaijan and Iran also met in 2003, in Tehran to sign the Framework Convention which was a commitment to protect and restore the Caspian environment (http://www.unep.org/regionalseas/Programmes/independent/caspian/default.asp). The main effort was directed to bring together the Caspian Sea ecosystem that has been fragmented under different territories and jurisdictions.

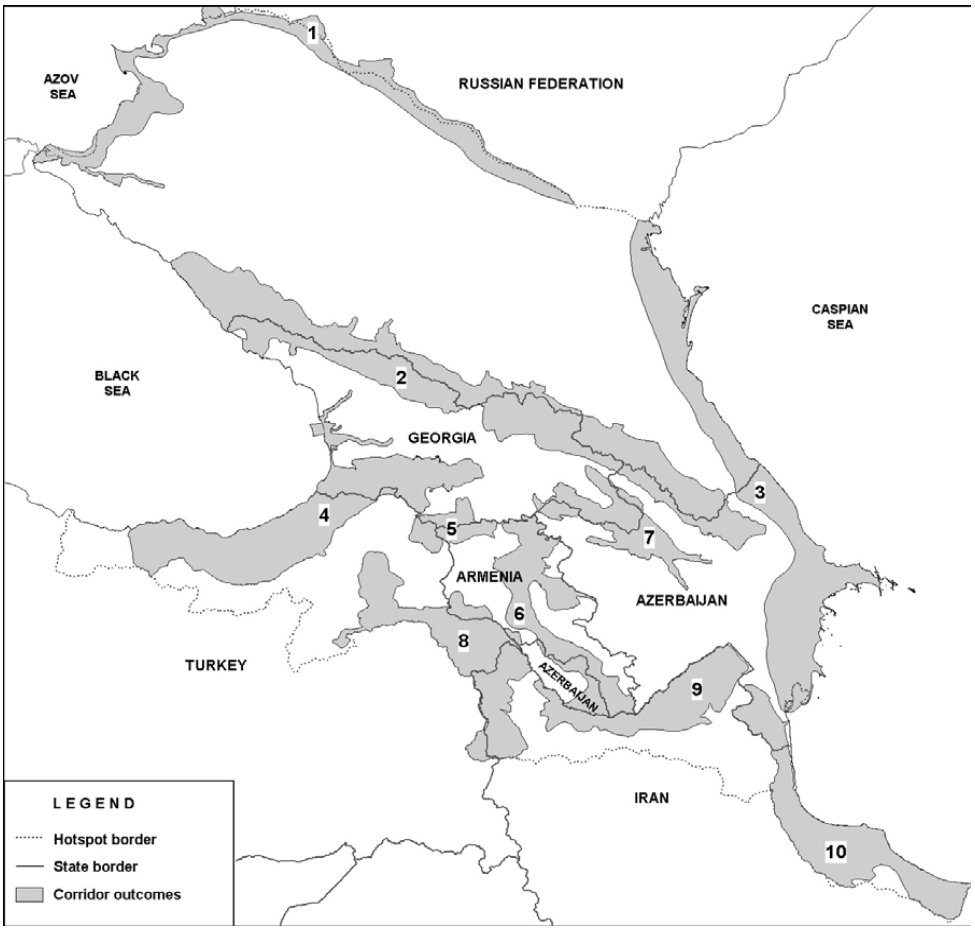
It is clear that steps have been taken recently to help protect the resources of the region. There are also efforts along the Caspian Sea to reinforce peace, stability, economic development, and good relations in the region. It seems as if the Russian republics and other countries in the region are interested in cooperating and are determined to increase political, economic, cultural and social connections across borders. It is also apparent that the Caspian Coastal territory has incredible natural as well as cultural and historical resources. There are some efforts on the national and local levels to develop a regional system that could bring together the fragmented landscape. With this thought in mind, this project has developed a Caspian Coastal Greenway Plan in order to spark interest and serve as a starting point for further analysis. The final plan overlays all of the natural and cultural resources of the region and illustrates how they

can be included in a regional greenway. This greenway will have economical, recreational, environmental and cultural benefits. This Greenway concept is very important for the multinational region within Russia where there are numerous different ethnic groups pursuing different goals. Political challenges and conflicts within the region and in neighboring regions, such as the conflict in the Caucuses are the main obstacles in the development of this greenway. However, if a greenway was able to be developed it may help to ease tensions between federal and local governments. The Caspian Coastal greenway plan developed by this project is not political, could serve to accommodate all of the different goals for the region and could attract people towards this idea.

B. The Caspian Coastal Assessment Plan

The Critical Ecosystem Partnership Fund (CEPF) developed a study for the region called the Caucasus Biodiversity Hot Spot. The project was developed with the help of experts from each country in the area, including Russia, Georgia and Iran. They conducted a detailed analysis of the important habitat and species and determined 10 conservation corridors within the region. This set of corridors was used as the basis for this project's assessment. The corridors provided by the CEPF were in some instances simplified to keep the greenway planning process conceptual for the time being. This project also presents a few new corridors to encompass other resources within the region.

The corridors identified by the CEPF are listed and illustrated below. These excerpts from the CEPF report give a good overview of the importance of each of these corridors.



"1. Kuma-Manych Corridor

The Kuma-Manych Corridor (2.08 million hectares) extends along the northern border of the hotspot in the North Caucasus Plain and includes the eastern coast of the Azov Sea. The corridor, located entirely within the Russian Federation, harbors numerous wetlands, large lakes and channels which are important areas for waterfowl. Parts of the corridor have been severely impacted by grazing, farming, poaching and overfishing.

The Kuma-Manych Corridor was delineated based on its importance for migratory waterfowl and its significant number of IBAs (Important Bird Areas). The Kuban River Delta has been designated a Ramsar site. Ten globally threatened species are found here, such as European mink, otter, bustard and three species of sturgeon. Eight wetland sites hold globally significant congregations of waterfowl, such as the red-

breasted goose and lesser white-fronted goose. Three wildlife sanctuaries protect only 4.1 percent of the corridor.

2. Greater Caucasus Corridor

The Greater Caucasus Corridor (4.68 million hectares) mainly includes middle and high mountain areas of the Greater Caucasus Range, extending from the Black Sea almost to the Caspian. The corridor runs along the borders of Russia, Georgia and Azerbaijan and contains the highest peak in Europe - Mount Elbrus (5,642m). Major habitats include deciduous and coniferous forests at middle elevations and elfin woods, shrublands, alpine meadows, glaciers and snowfields at high elevations. Threats to biodiversity include illegal logging, overgrazing in high mountain areas, poaching and political strife. Twenty globally threatened and seven restricted-range species are found here including East and West Caucasian turs and Dinnik's viper. Protected areas cover 35 percent of the corridor, including 15 strictly protected nature reserves, three national parks and 23 sanctuaries and other areas. Several reserves are adjacent to each other across national borders, offering great potential for transboundary cooperation. Political conflicts in Abkhazia (Georgia) and Chechnya (Russia) make work in certain areas of the corridor difficult. Existing protected areas are the basis of many investment projects in the region.

3. Caspian Coastal Corridor

The Caspian Corridor is located along the Caspian Sea coast from the Volga Delta on the north to the Elburz Mountains in the south, including parts of Russia, Azerbaijan and Iran. The Caspian Corridor comprised from coastal wetland, marine, semi-desert, mountain and desert habitats. The protected areas make up only 14% of the corridor. State natural resource management agencies have representative offices in the corridor.

4. West Lesser Caucasus Corridor

The West Lesser Caucasus Corridor is situated in the western part of the Lesser Caucasus Mountain Range, where it extends along the Black Sea from northeastern Turkey to southwestern Georgia, ending in central Georgia. The corridor contains the

highest levels of woody plant diversity with a large percentage of endemic and relic species.

Protected areas cover 11 percent of the corridor and include 12 nature reserves, seven national parks and five sanctuaries. Tran boundary cooperation between reserves bordering Turkey and Georgia has been initiated.

5. Javakheti Corridor

The Javakheti Corridor the smallest corridor in the Caucasus is situated in the northern part of the Southern Uplands on the border of Armenia, Georgia and Turkey. Habitats include high mountain wetlands with lakes of volcanic origin, steppes and meadows. The region is one of the three important migratory corridors for birds in the Caucasus. There are no protected areas in the corridor, providing opportunities to create new reserves, including across political boundaries.

6. East Lesser Caucasus Corridor

The East Lesser Caucasus Corridor in Armenia and the Nakhichevan Autonomous Republic of Azerbaijan is situated mainly in the eastern and southern parts of the Lesser Caucasus Mountain Chain. Fourteen globally threatened species are found here, such as Armenian mouflon, bezoar goat, otter, Armenian birch mouse and Tigran's elder. The Armenian birch mouse and the Armenian mouflon are restricted-range species in this corridor. Protected areas cover a quarter of the corridor, but only two of these are national parks, three are strict nature reserves and the remaining sixteen are sanctuaries with insufficient protected regimes to prevent biodiversity loss. The status of these protected areas should be increased and new reserves should be created.

7. Iori-Mingechaur Corridor

The Iori-Mingechaur Corridor is situated in the central part of the Transcaucasian Depression on the border between Georgia and Azerbaijan. The corridor includes intact arid plateau and foothill habitats with pistachio-juniper woodlands, as well as a significant portion of the floodplain forests in the hotspot. Steppe, semi-desert and

wetland ecosystems are also represented here. Nine globally threatened species inhabit the region including Mehely's horseshoe bat, common tortoise, imperial eagle and otter. Significant threats include overgrazing, poaching and infrastructure development. Protected areas cover 15.1 percent of the corridor. The corridor has high potential for transboundary cooperation among reserves.

8. Southern Uplands Corridor

The Southern Uplands Corridor covers the central part of the Southern Uplands on the border of Turkey, Iran and Armenia. Major habitats include mountain steppes and scattered wetlands. Two sites have globally significant congregations of birds. Overgrazing and poaching threaten the region's habitats and wildlife. Protected areas are poorly represented, covering less than 1 percent of the corridor.

9. Arasbaran Corridor

The Arasbaran Corridor includes the extreme northwestern part of Iran at the junction of the Southern Uplands and the Lesser Caucasus Range. The Araks River borders the corridor to the north. Major habitat types include mountain steppes, remnants of broadleaf forests and wetlands in the Araks River watershed. Mountain habitats are important for the leopard. Three sites along the Araks River are important for congregations of waterfowl. Globally threatened species include 16 species, such as the Armenian mouflon and bezoar goat. The Persian brook salamander is one of the three restricted-range species. Protected areas cover nearly a quarter of the corridor, but the protected status of these is generally too low to guarantee biodiversity conservation.

10. Hyrcan Corridor

The Hyrcan Corridor includes the Talysh Mountains in Azerbaijan and the northwestern part of the Elborz Mountains in Iran, along with a section of the Caspian coast. Major habitats include broadleaf forests, high mountain steppes and meadows and some coastal wetlands - important wintering grounds for endangered bird species. One wetland area has Ramsar status. Leopards are found in forest habitats. Protected areas (one strict nature reserve, one national park and 11 other types of protected areas) cover

an insufficient portion of the corridor (8.6 percent) and most of these have low protected status."

Source: Caucasus Biodiversity, Final version, July 31, 2003

www.panda.org

This project has identified two other major corridors that could be included as a part of the larger greenway network. These areas contain several protected areas and large areas of very significant habitat.

11. Volga River Corridor

There are currently three protected areas within the Volga Delta; Damchikski, Trehizbinski and Obzhorovski. A Ramsar designated wetland is also located within the delta area. The habitat around the Volga delta, as well as the areas important wetlands serve as a stopping area for migrating birds such as the mallard duck, diving ducks, gray goose, mute swan, coot and flamingos. Although parts of the delta are currently protected, the shore line of the Volga has no protected area. Protecting and enhancing the environments along the Volga could provide more habitat space for important species while reducing downstream pollution that negatively impacts the delta environments.

12. Kalmyk Corridor

The Kalmyk corridor would include four large existing protected areas. This corridor would be used to connect these fragmented areas and connect to the surrounding greenway corridors, especially the Caspian coast. The protected areas in Kalmykia are an important stopping area for migrating birds. More than 80% of these migrating birds nest in the nature reserves located along the Caspian coast (www.sevin.ru). The steppe environment in Kalmykia is also home to many rare species. The Caspian Coastal greenway project presents an excellent opportunity to include these large protected spaces in a large green network.

These twelve ecologically significant corridors are illustrated on the Caspian Coastal Greenway Analysis Plan (See Fig.17). For this conceptual plan several of the smaller corridors have been combined to simplify this map. Corridors four through nine have been condensed to one corridor. This map locates seven critical greenway corridors and are highlighted with different colors. On this map, the existing protected spaces are

shown in green. The seven corridors clearly encompass most of these existing protected spaces. The map is also overlaid with important population centers, artisan centers, archaeological sites, ramsar wetlands and shadow list wetlands as well as major road and rail transportation routes. The seven corridors encompass most of these resources as well as the ridgelines, the Caspian coast, and most of the forested areas in the region.

C. The Caspian Coastal Greenway Vision Plan

To begin the long planning process and to guide future efforts, the Caspian Coastal Greenway Vision Plan has been developed (See Fig. 18). This greenway vision plan was developed in order to attempt to accomplish three main objectives in the future.

1. To create a continuous greenway along the Caspian coast by linking existing protected spaces and using a multi-use trail to connect from north to south.

2. To develop local loop trails out of existing roads, walking trails, caravan routes and waterways to create a larger greenway network.

3. To connect the Caspian Coastal Greenway to the north and west to European greenway efforts and further south to re-establish the historic silk road.

The vision plan is a conceptual graphic plan of the region that identifies all of the important resources that were on the analysis plan and a few other elements. Although the analysis identifies seven major corridors for protection, the main purpose of this project to work mainly along the Caspian shore to develop a greenway backbone for the region. On the vision plan, there are red areas that represent key areas for protection to create a continuous greenway corridor along the shore. These shapes are conceptual, and extensive research will need to done in each area to determine the most viable areas for connections. Although a greenway could be developed without a completely continuous corridor of protected lands, this is the ultimate goal. This corridor of protected lands along the shore would contain a multi-use path for walking, running and biking that would roughly follow the historic volga trade route. Since this rough will accommodate several different uses it should be paved. The corridor of protected lands and multi use trail would stretch roughly 500 miles and form the foundation of a larger greenway network.

The greenway backbone along the Caspian shore would connect with numerous other types of trails in the region. The idea would be to use the main greenway to connect to different types of local trails in each Republic, forming loop trails like in the Belarus greenway. These loop trails would take advantage of different types of trails already existing in different areas to connect to the other important corridors developed by the analysis. The main greenway would connect to road trails, horse trails, caravan routes and waterway routes in Kalmykia and Astrakhan Oblast, and hiking trails and artisan trails in Dagestan and Azerbaijan. These different types of trails would be used to protect and display the various types of resources and history that each of these different regions has to offer. The conceptual connections to these resources and the important corridors are shown on the greenway vision plan as large green arrows. These trails could end up adding several hundred more miles to the greenway network. These have been kept very conceptual since much more detailed studies will need to be done in each area to determine the best way to connect to the shore line. The area around the main map has been used to show the rich diversity of the regions resources. These are a tiny sampling of the important and diverse habitats, cultural and historic landscapes, and the diversity of cultures and ethnicities.

Along these different local loop trails, replicas of different cultural and historical artifacts can be used to indicate the direction of the route along with more detailed signage. An example of this idea is shown on the greenway vision plan. Small replicas could be made by local artisans as trail markers. The different markers in each area would give each section of trail a distinct feel and would support local pride.

The third goal of this greenway vision plan would be to connect the Caspian Coastal greenway network to other European greenways and further south to re-establish the historic Silk Road.

Some of the benefits of developing the Caspian Coastal greenway and network of trails include:

1. Existing protected areas would be expanded. More habitat space would be added to the existing reserves. Rare and endangered species and their habitat would be further protected.

2. More critical environments could be protected as part of the greenway development. This will provide additional protection of rare and endangered species.

3. Important cultural and historic artifacts and sites would be more readily protected and be made available for tourist and public enjoyment.

4. The development of a greenway would help ensure that the area is protected and reduce the negative impacts of future developments.

5. The process of developing a greenway would further encourage partnerships and positive interactions between the different political organizations and ethnic groups of the region. This might contribute to the development of a more socially stable area.

6. A greenway that encouraged tourism and enhancement of local attractions could possibly increase economic development in the area and provide reliable income to more local people.

7. The Caspian Coastal region is largely unknown to people not living in the immediate region. It is an area with a beautiful climate and is home to numerous cultural, historic and natural resources. The development of a greenway and economic development could make the area a viable tourist and vacationing destination for people from all over the world.

8. The protection of the Caspian Coast as well as some of the major rivers flowing into the sea would help improve water quality and would limit and hopefully reduce overall levels of pollution.

9. Connecting the Caspian Coastal greenway to other European greenways would create the largest greenway network in the world and would attract world wide

attention. This would further support the Caspian Coastal region as well as the larger greenway movement.

Chapter 6: Recommendations and Future Strategies

The development of a greenway plan for the Caspian Coastal area does not ensure the success of the project. The work required to develop a regional project of this scale is incredible and requires a long period of time. Some of the next steps after developing this project are listed below.

1) Identify potential participants: The first step to develop a regional greenway is to identify potential participants including national governments, international partners, non governmental organizations, local authorities, private sector, educational institutions, industries and local media of the Caspian Coastal countries.

2) Bring together stakeholders and communities: One of the most important initial steps in the planning process is to inform stakeholders and the public and encourage them to engage in dialogue about the project.

3) Develop collaboration: It is critical that an open dialog be established between the republics in Russia as well as international connections between Russia, Azerbaijan and Iran.

4) Identify potential development areas: As the project develops it will be necessary to identify critical areas for protection as part of the greenway project. Since this greenway will include cultural and historic sites and artifacts these should also be identified at this point as well.

5) Establish a regional environmental network that will expand the greenway in the future: The natural, cultural and historical resources of this area are not only along the coast of the Caspian shore so it is important for potential linkages to other resources to be identified. The significance of the greenway will be magnified if its principles of protection and enhancement of regional resources are expanded throughout the region to create a larger environmental network.

The Caspian Coastal Greenway is located in an area adjacent to some other significant greenway and cultural protection activities. The Caspian Coastal Greenway could potentially connect to the Silk Road and the Amber Trail Greenway. The Silk

Route runs to the south of the Caspian coastal area. Until recently the Silk Route was almost forgotten. Today, international efforts are taking place to protect historical sites along the Silk Route and re-establish people's connection with their own historical identities. The Amber Trail Greenway runs through Poland, Slovakia and Hungary. The greenway runs along an ancient trade route used for transporting amber from the Baltic to the Adriatic Sea. The trail has a number of historic towns, UNESCO heritage sites and natural resources.

The Caspian Coastal Greenway could be connected to the south to the Silk Road which in turn connects to the Amber Trail to the west. The Caspian Coastal Greenway could also be connected to the northwest along the Volga River which could eventually be connected to the north section of the Amber Trail.

Chapter 7: Conclusion

The Caspian Coastal Greenway Vision Plan serves as a starting point to continue greenway planning in the region. It presents a broad plan for the future and will increase interest in the region. The vision plan should serve to begin the planning process and at least show different stakeholders possibilities for future development and the rich potential in the region. Developing a greenway in the Caspian Coastal area is a vital step to unite the region and highlight cultural and ecological resources of the region. Greenway development will serve multiple purposes including improving the economic conditions, protecting wildlife habitat and open spaces and preserving the cultural and historic resources for the future. The development of a greenway will also help to the people of the region to learn more about each other, encourage interaction and help to bring stability to the region. The final goal of this project should be to develop a greenway along the Caspian Sea and then connect that to the Silk Route and the Amber Greenway Trail. If these connections were made in the future it would create the largest greenway loop in existence.

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