

**Regional Stakeholder Analysis for the Caspian Environment Programme**

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## **Forward**

The Caspian Environment Programme (CEP) is a regional umbrella programme established by the Caspian littoral states and aided by the international agencies. Born out of a desire for regional cooperation, expressed through a number of regional agreements, including the Almaty Declaration on Environmental Cooperation of May, 1994, the CEP was agreed to in June 1995 during a joint mission by The World Bank, United Nations Environment Programme (UNEP), and United Nations Development Programme (UNDP). This mission marked the start of a close partnership between the region and the international community. The mission also cemented the collaborative mechanisms between the GEF implementing agencies.

As it now stands, the CEP is a regional programme that encompasses all Caspian States and numerous international agencies, including The World Bank, UNEP, UNDP, the European Union/TACIS (EU/TACIS), and many others. During meetings held at Ramsar, Islamic Republic of Iran, in May, 1998, the CEP was launched officially. A Steering Committee has been established, and the Caspian littoral states agreed that the Concept Paper produced during the previous year in collaboration with The World Bank will form the basis for the CEP. In addition, UNDP-led efforts towards a Global Environment Facility (GEF) project for the Caspian focusing on its priority transboundary issues was endorsed by the Caspian littoral states. The endorsement of the Caspian Environment Programme UNDP/GEF project occurred in October 1998 and a portion of the funds was released by UNDP/GEF under Advance Authorization in April 1999. EU/TACIS funds were released beginning in May 1998.

In order to meet the objectives set out by the Caspian Environment Programme, a detailed Transboundary Diagnostic Analysis (TDA) was initiated. This TDA was to complement the work of the National Caspian Action Plan of each of the Caspian States, as well as the Strategic Action Programme to coordinate the efforts of these states.

One critical part of the TDA is a Stakeholder Analysis, as indicated in the Guidance Documents for TDA Preparation under the International Waters Programme of GEF. There was little specific guidance for how to prepare a Regional Stakeholder Analysis, so this project has broken new ground. The TDA Guidance Document provides only the following instruction:

### **“5. Stakeholder Analysis**

A description of all the stakeholders, including institutions, organizations, ministries, agencies and industry related to the perceived issues should also be incorporated. The information pertaining to this list would include the effect of the issue on stakeholders, the nature and effectiveness of the interactions between the stakeholders, as well as their strengths and weaknesses in view of their actual and/or potential role in managing water and water dependent resources.”

The Stakeholder analysis identifies the broad spectrum of Stakeholders in a transboundary context for the Caspian Sea, separately for each of the Major Perceived Problems and Issues (MPPI). These MPPIs were defined during the earlier phases of the TDA process. Both national and regional stakeholders have been identified. The analysis includes major affected and contributing Stakeholders for the CEP, describing the Stakeholder's attributes, and identifying the Stakeholder's interests in matters pertaining to the CEP. This information is summary in nature. This information has been used to identify Stakeholder conflicts with Environmental Quality Objectives of the TDA, and to guide interventions at the National Caspian Action Plan and Strategic Action Programme levels. (H. Ghaffarzadeh)

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### Abbreviations:

CEP	Caspian Environment Programme
CEZ	Caspian Economic Zone
CZR	Coastal Zone Resident
MAGICAs	Ministerial and Governmental Intersectoral Coordinating Agents
MPPI	Major Perceived Problems and Issues
NGO	Non Governmental Organization
PPA	Public Participation Advisors
PSA	Property Sharing Agreements
SHAQ	Stakeholder Analysis Questionnaire
TDA	Transboundary Diagnostic Analysis

## **Executive Summary:**

The Regional Stakeholder Analysis for the Caspian Environment Programme (CEP) was commissioned in order to identify and empirically examine the attitudes and interests of those groups, institutions, ministries and individuals who hold a stake in the Caspian environment. These stakeholders are both contributors to and affected by environmental issues in the Caspian water and in the Caspian coastal zone. The inclusion of stakeholder interests into the CEP Transboundary Diagnostic Analysis (TDA), as well as into the collection of analysis on regional issue is intended to improve the success of the programme by taking into account those most affected by the recommendations made through the CEP. Additionally, the identification of conflicts of interests between stakeholder groups is intended to assist the CEP in making policy recommendations that are both realistic and realizable in terms of managing issues before conflicts become exacerbated.

This study was conducted during the summer and autumn of 2001. A survey was developed in order to determine the level of interest and concern about the eight Major Perceived Problems and Issues (MPPI) identified in the TDA. The survey was administered in all Caspian states with an average of fifty completed surveys returned for analysis per state. Though the results of this can not conclusively identify all interests, concerns and conflicts, they provide illuminating empirical evidence about the actual attitudes in the region among the stakeholder groups. The awareness and acknowledgement of these attitudes can be employed to shape more effective policies in the region.

The findings of the survey demonstrate that there are a number of issue that are of high concern to stakeholder groups in the region, while other issue areas are of less concern to stakeholders than expected. The MPPI prioritization for each major stakeholder group is discussed followed by the prioritization of root causes. Issues of high level concern for each stakeholder group is presented and analyzed as appropriate. These provide an overview of salient issues for the individual stakeholder groups.

Potential conflicts have been identified which may now be addressed in the objectives of the Caspian Environment Programme. These conflicts include concerns about the image of the energy industry and ministries level of concern about the regional environment, the prioritization of government funding for environmental programmes while meeting basic human needs, use of a fee system for water use, access to potable water as a health concern, the degree of soil erosion affecting the environment, the affect of water level fluctuations on the environment, and the presence of invasive species in the Caspian waters.

Finally, suggestions are offered for overcoming potential conflicts between stakeholder groups. These include enhanced education projects, support an energy industry oil pollution management regime, create regional environmental monitoring and standards, implement alternative technologies to reduce municipal wastes, introduce agricultural practices to significantly reduce pesticide and herbicide use in the catchment area, develop environmental monitoring programmes utilizing NGO and oil company coordination, and introduce technologies to reduce industrial wastes, create realizable fishing restriction enforcement practices, increase monitoring for and minimization of exotic species and require use of best available technologies in the Caspian. There is evidence of support for these programmes from the Regional Stakeholder Analysis.

## **Introduction and Methodology:**

The implementation of a regional stakeholder analysis is a new development for programmes in the Global International Waters Assessment. Therefore, there is a lack of studies to precede this one. Nonetheless, the stakeholder analysis is intended to identify those groups who have a stake in the environment of the Caspian. These groups may be well organized and closely linked or latent and unorganized. Nonetheless, identification of these groups is important to the process of policy recommendation development. These groups will be most directly affected by the changes in the environment of Caspian, and may benefit or be harmed by the policies recommended by the CEP.

Further, conflict between groups could stymie implementation of effective policies. Alternately, these policies may polarize groups leading to increased conflict between groups that may eventually erode the legitimacy of the Programme. Therefore identification of these groups, their interests and potential conflict must be addressed in the early stages of the Programme development. This study provides an overview of these groups, their interests, concerns and stake in the Major Perceived Problems and Issues identified in the Transboundary Diagnostic Analysis. Additionally the potential for emerging conflict between these groups in regards to these issues is addressed. Finally, recommendations for these are offered as a means to avert conflicts of interests between stakeholder groups in the region.

Participants in the Regional Stakeholder Analysis Survey include: Coastal Zone Residents, members of the scientific community, Environmental Ministries, Agriculture and Fishing Ministries, Industry, Multinational Corporations, NGOs, Energy Ministries, Regional and Municipal Governments, Fishermen, and Public Healthcare Providers. In some sub-issues of the Major Perceived Problems and Issues, these stakeholder groups are separated into more specific sections. These issue specific groups are addressed throughout this report as appropriate. Other important stakeholder groups who were not participants in the stakeholder analysis survey include: Economic Ministries, Transportation Ministries and Foreign Affairs Ministries. Though this study lacks evidence regarding their views of environmental issues from survey data, other empirical data will be included to delineate the interests of these groups relating to environmental issues in the Caspian region.

These issues were developed and defined during the first phases of the Transboundary Diagnostic Analysis Process. Representatives from all Caspian states were charged with identifying major perceived problems and issues (MPPIs). These MPPIs were the basis for the themes addressed in this survey to determine if the stakeholders felt that these were important issues and perceived problems. Additionally, the root causes that participants were asked to rank were also identified by these Caspian representatives during the TDA process.

Survey participants from the above mentioned groups given the survey in the late summer of 2001, with the assistance of the MAGICA and PPA representatives to the CEP. Survey participants were all countries of the Caspian region and were selected based on their interest and expertise in the region by Public Participation Advisors and MAGICAs for each country. See "CEP Regional Stakeholder Survey" in appendix. Survey participants were asked to rank their level of agreement with statements in the stakeholder analysis questionnaire (SHAQ). The scale was from 9 to 1 with 9 representing "agree strongly", 1 representing "disagree strongly" and 5 representing "no opinion". In these tables there are three measures with each represented stakeholder group. A measure of low, medium or high, the average/mean ranking of participants within a specific stakeholder group and then in parentheses is the standard deviation. The low, medium and high represent the overall prioritization of an issue by level of agreement. high was measured for strong agreement 9-7.5, or strong disagreement 1-2.5, medium represents averages from 7.4-6.0 for agreement and 4.0-2.6 for disagreement, and low is 5.9-4.1 for the lowest level of prioritization. The mean ranking was calculated from those surveys that answered the particular section of questions, and non-answers were discarded. The standard deviation is a calculation of how variation there is away from the

mean among respondents. Thus, the lower the standard deviation signified the closer the consensus on the issue.

Ministerial data from Kazakhstan was not submitted at the time of this report. And quite incomplete ministerial data from the Russian Federation was submitted. Despite these inadequacies, survey participation was higher than expected and has provided illuminating evidence of the stakeholders' perceptions of environmental issues.

### **Potential Conflicts Between Stakeholder Groups**

The survey results produced a number of issue areas where stakeholder groups were in potential opposition to one another. These potential conflicts between groups must be recognized and addressed as the next phase of the Caspian Environment Programme comes into effect. These conflicts may not be realized yet, however, it can be expected that if left fallow, they may become exacerbated by policy recommendations made by CEP. A central concern of the Stakeholder Analysis is to define these conflicts, to determine the degree to which they may flare up and become problematic, and to suggest actions CEP could advocate in order to prevent these. Additionally, the ultimate success of the CEP depends on consensus and support of various stakeholder groups in the region. If CEP serve to heighten these latent conflicts between stakeholder groups, it is possible that the mission of CEP will be disrupted.

The conflicting responses among stakeholder groups presented here are based on the averages calculated and discussed above. In some cases these issues are not addressed in previous sections because they are not high priority issues for the individual stakeholder groups. Nonetheless, these are cases where the average level of stakeholder agreement (and disagreement) differs significantly from that of other stakeholder groups. There was no single MPPI that elicited complete consensus among all stakeholder groups with regards to priority ranking. However, for all groups, except public healthcare provider stakeholder group, decline in certain fisheries was a high priority concern.

Of the prioritization of MPPIs, there is only one area of strong disagreement between stakeholder groups.

- The concern regarding the degradation of costal landscape was a high priority MPPI for multinational corporations, whereas the Agriculture and Fishing Ministries stakeholder group, the Energy Ministry stakeholder group, the regional and municipal governments, public healthcare provider stakeholder group, and fishermen stakeholder group ranked this as a very low level concern.

With regards to the root causes, there are a few discrepancies as well. These are cases where one group of stakeholders has ranked a root cause as a high priority concern, while others have ranked the same root cause as a low level concern.

- The lack of advanced technologies is seen as a lower level root cause by the environmental ministries, while the scientific community, industry stakeholder group, multinational corporation stakeholder group, Energy Ministry stakeholder group, regional and municipal governments, and public healthcare provider stakeholder group see this as a high priority root cause. Though this variation among stakeholders may not be viewed as conflict inducing, the possible conflicts among interest groups regarding spending of limited budgets on technology that some groups are less convinced are needed. Though this may occur at local and national levels, sensitivity to this potential conflict may be warranted.

- The root cause of regional poverty also was ranked as a high priority concern for Agriculture and Fishing Ministries stakeholder group, and fishermen stakeholder group. Alternately the environmental ministries rank regional poverty as a low priority root cause. All others ranked it as a mid level concern.
- The abuse of power is ranked as a high priority root cause by multinational corporation stakeholder group, while the energy ministries, regional and municipal governments stakeholder groups and public healthcare provider stakeholder group who rank this as a low level concern. This may be due to the ability of the multinational corporation stakeholder group to focus on this issue, while other groups are more eager to deflect attention from this root cause.
- The abuse of power as a root cause for environmental degradation was a high priority concern for the multinational corporation stakeholder group, whereas the Energy Ministry stakeholder group, regional and municipal governments, and public healthcare provider stakeholder group rank this as a low priority concern. Though this discrepancy may actually reflect the relative innocuousness the multinational corporation stakeholder group senses in their response, whereas other groups, including those who ranked it as a low level concern may not be able to identify this seemingly endemic problem as a root cause due to political concerns. Nonetheless, the ability to remedy this particular root cause is clearly beyond the bounds of CEP purview.
- Another root cause that had significant discrepancies between stakeholder groups is the lack of public awareness of environmental problems. The environmental ministries energy ministries and industry rank this as a high level concern, where as Agriculture and Fishing Ministries stakeholder group, multinational corporation stakeholder group, the scientific community stakeholder group, NGO's public healthcare provider stakeholder group, fishermen stakeholder group, and coastal zone resident stakeholder group see this as a low level root cause for environmental degradation in the Caspian.
- The weakness in civil society is a high level concern for the Energy Ministry stakeholder group and the public healthcare provider stakeholder group, while the environmental ministries stakeholder group, the Agriculture and Fishing Ministries stakeholder group, multinational corporation stakeholder group, industry, scientific community, NGO's, fishermen stakeholder group, and the coastal zone resident stakeholder group see this as a low level priority. It is possible that the Agriculture and Fishing Ministries stakeholder group have more interaction with representatives of a civil society than other groups. Alternately, it may be a result of skewed results from low survey response rates among the various groups.

### **Decline in Certain Fisheries:**

All stakeholders have listed decline in certain fisheries as a high level concern. Within this issue the most dominant sub-issues are abuse of power, lack of law enforcement, natural habitat destruction, and lack of common agreement on management of stocks in the region. Poaching was also a concern, though of less significance than the sub-issues listed above.. Those groups most highly affected by the decline in certain fisheries are fishermen, Agriculture and Fishing Ministries, and coastal zone residents. To a lesser degree, environmental ministries, regional and municipal governments, and the scientific community members are also affected by the decline in certain fisheries. It is perceived that the groups contributing to the decline in certain fisheries include environmental ministries, agriculture and fishing ministries and regional and municipal governments for not effectively enforcing the current policies that would regulate the amount of fish taken from the Caspian. Also it is perceived that the industries, energy ministries, and multinational corporations conduct activities that lead to decline in fishing stocks. The fishermen stakeholder group, and coastal

zone resident stakeholder group are also believed to contribute to the decline in certain fisheries by over fishing certain stocks.

Those groups most highly affected by the decline in certain fisheries are fishermen, Agriculture and Fishing Ministries, and coastal zone residents. To a lesser degree, environmental ministries, regional and municipal governments, and the scientific community members are also affected by the decline in certain fisheries. It is perceived that the groups contributing to the decline in certain fisheries include environmental ministries, agriculture and fishing ministries and regional and municipal governments for not effectively enforcing the current policies that would regulate the amount of fish taken from the Caspian. Also it is perceived that the industries, energy ministries, and multinational corporations conduct activities that lead to decline in fishing stocks. The fishermen stakeholder group, and coastal zone resident stakeholder group are also believed to contribute to the decline in certain fisheries by over fishing certain stocks. The analysis shows that there are signs of polarization between several groups regarding the decline in certain fisheries.

- In response to the statement “I think it is safe and healthy to eat fish from the Caspian” the multinational corporation stakeholder group and fishermen agreed, whereas energy ministries stakeholder groups, and NGO members disagreed.
- In response to the statement “Fishermen benefit the most from the fish they catch” the energy ministries stakeholder group agreed, whereas the regional and municipal governments disagreed
- . In addition to these, the statement “An enforced system of mutually agreed upon fishing limits would be effective for reducing over-fishing in the Caspian” was agreed to by the environmental ministries, Energy Ministry stakeholder group and regional and municipal governments, whereas the multinational corporation stakeholder group disagree.
- The statement “radiation is the primary reason that there are fewer fish in the Caspian” was agreed to by public healthcare providers and disagreed to by members of the scientific community and the multinational corporation stakeholder group. These discrepancies suggest that there are perceptions among stakeholder groups that others are responsible for decline in certain fisheries.
- There is a minor discrepancy between fishermen and oil companies regarding the impact of the oil and gas development on fishing stocks. Though this is currently only small discrepancy, it may become more pronounced as more energy industry activities are pursued in this area.
  - Specifically, in response to the statement “There are fewer fish in the Caspian than there used to be because of recent oil drilling.” The Agriculture and Fishing Ministries stakeholder group (7.39) and the fishermen stakeholder group (7.29) agreed strongly with this while the coastal zone resident stakeholder group (5.92), environmental ministry stakeholder group (5.7), regional and municipal governments stakeholder group (5.67), and industry stakeholder (5.72) group all have averages that appear to have no opinion on this issue. The multinational corporation stakeholder group has a very low level of agreement with this issue (6).

These discrepancies and emerging polarization of attitudes bears monitoring by CEP. All stakeholder groups list the decline in certain fisheries as a significant problem, however the analysis demonstrates that the cause of this problem is not clearly understood by stakeholder groups. Worse yet, the dependence on these fragile fisheries for economic gain, and basic sustenance as well as the transboundary nature of this issue make this a prime issue for conflict both among stakeholder groups but also potentially among states in the region.

#### **Degradation of Coastal Landscape:**

The degradation of coastal landscape did not rank as a high priority concern for stakeholders in this survey. Most sub-issues were rated as low-to-medium priorities by stakeholder groups. Desertification, flooding, and water flow disruption elicited mild concern. Soil erosion, and the resulting silting of water ways was ranked as a higher priority issue among stakeholder groups, which was also reflected in decline in coastal infrastructure and amenities. Within the

degradation of coastal landscape sub-issue, the highest priority issue overwhelmingly is the need to create a coordinated coastal zone management plan in the Caspian region. Among those who most strongly support an integrated coastal management plan are energy ministries, environmental ministries, industries, regional and municipal governments, and coastal zone residents. Only agriculture and fishing ministries are moderately supportive of this plan.

- The only discrepancy was in response to the statement “There should be fees for water used in the irrigation of crops.” The Energy Ministry stakeholder group agreed with this statement, while the scientific community and industries disagreed. This suggests that water loss from the irrigation of crops may be causing concerns for the Energy Ministry stakeholder group. This may be because industries use water free of charge currently, while the Energy Ministry stakeholder group in part oversees hydro-electric power generation, and the decline in available water reduces the amount of water available to power dams. Though this is not a high level concern for either group, this conflict should be addressed prior to implementation of any regional water management plan if it pertains to such a strategy in any way. Further, the tendency to shy away from the use of fees for water used for agriculture may indicate that this system may also be imposed on industry as well.
- This issue warrants monitoring by the CEP if drought conditions prevail in the region, or if transboundary disputes over water rights become exacerbated by increased human demand.

#### **Decline in Biodiversity:**

Perceived decline in biodiversity in the Caspian ecosystem elicits high priority concern from stakeholders. Many stakeholder groups responded similarly to these sub-issues. Within these the stakeholder groups express the highest level of concern about decline in endemic species and factors that may be contributing to eutrophication, and loss of pristine areas untouched by human development. Lower priority sub-issues include concern about the loss of endangered species, concern about energy industry activities, and intensive fishing of some stocks.

- The most notable issue of concern to stakeholders that resulted in discrepancies, and potential conflicts of interests is in regards to the statement “It is more important for people to use the Caspian resources that they need than it is to leave them untouched because of environmental concerns.” There was agreement with this statement among the following stakeholder groups: coastal zone resident stakeholder group, environmental ministries, agriculture and fishing ministries, regional and municipal governments, the scientific community, public healthcare providers and fishermen. The Energy Ministry stakeholder group, industries, multinational corporations and NGO’s disagreed with this statement.
- Though the level of agreement and disagreement was not especially high at either end of this, except for the coastal zone resident stakeholder group, who agreed strongly about this. This is worth considering by CEP, because this is one of the groups most dependent on the resources in the Caspian, and a group that may be responsible for habitat destruction that will lead to the decline in biodiversity. Further, unless this population understands the immediate and long range importance of environmental conservation, they will also be most affected by eventual losses as a result of this.
- Alternatively, the nature of the loss of biodiversity may be outside the realm of the transboundary issues to be addressed by CEP. However the migratory nature of many species as well as an increase in opportunistic invasive species may enhance the transboundary nature of these issues.

#### **Overall Environmental Decline:**

Environmental decline captures and reflects a broad number of environmental issues. In general, there was agreement among stakeholder groups regarding the prioritization of these

specific sub-issues. Within these, stakeholder groups express the most concern about environmental degradation from agricultural and industrial runoff. Though there is limited concern about industrial runoff causing human health problems, there is a high level of agreement among all stakeholder groups that industrial and agricultural runoff is threatening the Caspian environment. There are several issues that elicit potential conflict between stakeholder groups.

- The first of these is the statement “Unless there is a severe environmental crisis, care for the environment will not be a priority for the people.” This statement was agreed to by the environmental ministries, coastal zone resident stakeholder group, and healthcare providers, and strongly agreed to by the Agriculture and Fishing Ministries stakeholder group, regional and municipal government stakeholder group, the NGO stakeholder group, the multinational corporation stakeholder group, and fishermen stakeholder group. In contrast, the Energy Ministry stakeholder group and the industries did not agree with this statement. Though the level of disagreement was relatively mild, if environmental conditions worsen this may lead to more polarization and significant conflict among these groups.
- Another issue where polarization among stakeholder groups is emerging is in relation to the actual causes of the environmental degradation. In response to the statement “There is adequate scientific knowledge about the causes of environmental decline in the Caspian” the environmental ministries agreed somewhat, while the fishermen stakeholder group disagreed strongly. This discrepancy suggests that there is not adequate information exchange between these two groups, or that the environmental ministries feel more defensive of the scientific knowledge they have accumulated, while fishermen stakeholder group do not understand the causes of the decline in environmental conditions in the Caspian.
- The third issue where there are discrepancies among stakeholder groups is in response to the statement “Private industry should take all responsibility for reversing environmental degradation of the Caspian”. The agriculture and fishing ministries, industry, agreed with this, and the environmental ministries, regional and municipal governments, and health care providers agreed strongly with this. In contrast, the multinational corporation stakeholder group disagreed with this statement. This suggests that the contrast between these groups may become more pronounced if environmental conditions worsen. Further, the responsibility for losses from deteriorating environmental conditions may be placed on the private industries by the above mentioned stakeholders, while the multinational corporation stakeholder group, and primarily those related to the energy industry are of the opinion that the Caspian waters were polluted prior to their Post-Soviet involvement, and therefore they do not bear the responsibility for the conditions of the Caspian environment, beyond the scope of their immediate activities. This particular issue may warrant further monitoring by the Caspian Environment Programme in order to prevent further division among these groups.
- A discrepancy, that is not yet polarized, is in regards to air quality issues. In response to the statement “Air quality is a significant problem in the Caspian region.” The public healthcare provider stakeholder group (7.43) agreed strongly, while the coastal zone resident stakeholder group (5.11) and industry (5.11) were of no opinion on this issue. This may signify that the lack of opinion is also partially due to the lack of accountability of the industry stakeholder group for this concern.

These concerns should continue to be monitored as policy recommendations are formulated. Perhaps a more indepth study of these issue, as they are viewed by stakeholders is warranted. This would require more direct contact with survey participants and more in-depth interviews. Nonetheless, these preliminary results suggest that none of these discrepancies are too difficult to overcome if handled with care.

#### **Decline in Human Health:**

Human health is closely linked to environmental health issues. Human health issues did not rank as an especially high priority concern among stakeholders though. There were high levels of prioritization agreement among many stakeholder groups. The highest level of concern was the sentiment that people would be healthier if the environment were cleaner. The only deviation within this is public healthcare providers who recognize that there are other factors contributing to human health decline. Other sub-issues that were lower priorities were government attention to basic human needs prior to funding environmental protection, air quality concerns in the region, industrial pollution, and the need for sewage treatment. There were two specific issues where stakeholder groups were in polarized disagreement.

- The first is in response to the statement “Air quality is a significant problem in the Caspian Region.” Public healthcare providers agreed very strongly, and Energy Ministry stakeholder group, regional and municipal governments, the scientific community and fishermen also agreed. In opposition, the NGO stakeholder group did not agree that air quality is a significant problem in the region. While this is not especially concerning, immediately, if the expectation that civil society will assist in the development of programmes focusing on environmental issues, it may be important to educate NGOs about what other stakeholder groups see as important concerns. This is certainly within the realm of the CEP.
- The second issue that elicited discrepancies among the stakeholder groups is in regards to the statement “The government should spend money on the basic needs of people, like housing, healthcare and good jobs, before it spends money protecting the environment.” Though none of the groups felt very strongly one way or another about this, polarization is beginning to occur. Those who agreed with the statement above include energy ministries, regional and municipal governments, and fishermen stakeholder group. In contrast the environmental ministries, scientific community, industries, multinational corporation stakeholder group, NGO’s, and public healthcare providers disagreed with this. This division among these groups may become problematic if government budgets become more strained. Further, this leads to the concern that environmental stewardship can be complimentary to economic development, which some groups may be less immediately aware of than other.
- A significant, but as of yet non polarized discrepancy among stakeholder groups in regards to the MPPI decline in human health is related to access to potable water. In response to the statement “In the Caspian region, the biggest threat to the human population is the lack of safe drinking water” the public healthcare provider stakeholder group (8.14) agreed very strongly. Alternately, the NGO stakeholder group (5.85) and the regional and municipal governments stakeholder group (6.00) were less concerned with this problem. This is of specific importance because the NGO community may be needed to rally the governments in regards to this issue, and yet neither the advocates nor the enforcers appear to be much concerned with the issue. The coastal zone resident stakeholder group (6.85) is also concerned, though to a lesser degree.
- Another significant, but as of yet non polarized discrepancy among stakeholder groups in worth noting in these results is also between the NGOs and the public healthcare provider stakeholder group. In response to the statement “Radioactive materials have led to a decline in human health” the NGO stakeholder group (5.26) had a relatively innocuous response level, where as the public healthcare provider stakeholder group (7.86). Again, this suggests that though the NGOs are not aware or concerned about this, the public healthcare provider stakeholder group is. The NGOs need information in order to effectively lobby for change, while public healthcare provider stakeholder group may need to consider forming into an NGO as well in order to educate the policy makers and population about their observations.
- A decline in human health, resulting from poor environmental conditions is difficult to prove at best. Nonetheless, the perception of many both inside and outside the Caspian region is that there are significant health hazards in the region. Conditions from non-potable ground water, to the perceived presence of banned pesticides to heavy metal accumulation in fish tissues leads to conditions that result in sub standard living conditions for coastal zone residents, as well as others who may want to move into the area. Additionally, the persistent from a pressures a population in

declining health creates unfavorable circumstances for economic development. This may be more of a strain on these communities and on the region than other environmental issues combined. Therefore, though marginally transboundary, the perceived decline in human health as a result of poor environmental conditions should be monitored by CEP in the future.

#### **Decline in Coastal Infrastructure and Amenities:**

Overall, the decline in coastal infrastructure and amenities in the Caspian region ranked as a lower level concern among stakeholder groups. There were medium and low level prioritizations of most coastal infrastructure and amenities sub-issues, including deterioration of roadways, pressures on ports, concerns about destruction from oil activities, deterioration of sea walls, and municipal waste treatment facility deterioration. The only sub-issue that elicited a higher level of concern was soil erosion leading to the decline in environmental amenities. In this sub-issue, municipal and regional governments and environmental ministries strongly agreed that soil erosion was contributing to environmental decline in the region. There were two areas of potential conflict of interests between stakeholder groups.

- The first is in response to the statement “Mining activities reduce the water quality of the Caspian.” The Energy Ministry stakeholder group disagreed with this statement, while every other stakeholder group agreed heartily with this. This may suggest that the Energy Ministry stakeholder group is being targeted by these other stakeholder groups for fouling the waters of the Caspian. This perception bears continued monitoring by CEP.
- The second issue is in regards to the statement “Sea level fluctuation has been responsible for most damage to the coastal infrastructure.” The environmental ministries, energy ministries and regional and municipal governments agree with this, while the multinational corporation stakeholder group disagrees. This suggests that the multinational corporations may think that the decline in the condition of the Caspian infrastructure is due to other causes, such as economic decline or poor quality construction, rather than sea level change.
- A notable non polarized discrepancy among stakeholder groups is in relation to soil erosion. In response to the statement “Soil erosion contributes to the decline in environmental quality of the Caspian” the Energy Ministry stakeholder group (5.33) reflected low concern about this issues, while the Agriculture and Fishing Ministries stakeholder group (8.33) saw this as a very high level concern. This may be due to the effect of erosion on both fisheries and loss of soil from farmlands. Alternately, the Energy Ministry stakeholder group may not see this as such a high level concern, even though their activities may be contributing to this problem.

#### **Emerging Issue Potential Damage from Oil and Gas Activities:**

The potential damage as a result of increased oil and gas activities in the Caspian region elicits higher levels of concern regarding sub-issues. Stakeholders in the Caspian region view oil and gas activities as both a blessing and a curse for environmental stewardship in the region. There are several areas of high level of agreement between stakeholders including the need to use the best available environmental technologies to protect the Caspian, and the potential for development of an industry-led oil pollution agreement in the Caspian. The use of best available technologies to improve and protect environmental conditions may be applied to pipeline construction, shipping technologies, and safeguarding against destructive seismic activity. Lower priorities were assigned to increased demands on refineries and ports in the region. There are two specific areas that are ripe for potential conflicts of interests between stakeholder groups.

- The first is in response to the statement “The preservation of the Caspian ecosystem cannot take place at the same time as oil drilling activities.” The environmental ministries, Agriculture and Fishing Ministries stakeholder group, public

healthcare provider stakeholder group, and fishermen stakeholder group agreed with this statement, whereas the industries disagreed with this statement.

- The second discrepancy between stakeholder groups is in response to the statement “Multinational corporations and the energy industry do not care about the environment.” The Agriculture and Fishing Ministries stakeholder group, and fishermen stakeholder group both agree with this statement, whereas the regional and municipal governments, industries, and multinational corporation stakeholder group disagree with this issue. This suggests that these discrepancies should be addressed by the CEP, perhaps by facilitating forums between these groups to discuss concerns about the activities of each group. Further, if left fallow, this may become problematic in the future as more energy industry activities take place in the region.
- Other notable polarizing discrepancies exist in regards to the issue of the effect of energy industry activities on the fishing industry. This is addressed in the previous section on the decline in certain fisheries.

### **Emerging Issue Introduction of Exotic Species:**

The perceived problem of increase in exotic or invasive species ranked as the lowest among most stakeholder groups when compared to other groups. However, within the issue, sub-issues elicit higher concern among affected stakeholder MPPI. The three main sub-issues all have importance to those stakeholders who responded to this portion of the survey, with varying degrees of disagreement among stakeholders.

- In response to the statement “I have seen unusual creatures in the Caspian that were not there ten years ago” there was agreement among fishermen, and among agriculture and fishing ministries, whereas the environmental ministries stakeholder group, Energy Ministry stakeholder group and the multinational corporation stakeholder group there was disagreements.
- This may be a result of proximity to the effects, or it may reflect a discrepancy between those contributing to the issue and those more directly affected by it. Yet, these discrepancies warrant monitoring, and perhaps managing, given that those responsible for increasing the flow of these life forms into the Caspian are those who are least concerned about these issues.

## Summary and Recommendations:

The results of the stakeholder analysis survey reflect many findings of the Caspian Environment Transboundary Diagnostic Analysis. However, the degree of concern among stakeholder groups has been checked empirically. Recommendations for overcoming or minimizing stakeholder conflicts with regards to sub-issues are outlined in the supplemental tables. For the Major Perceived Problems and Issues the following recommendations include:

1. Increase educational programmes for stakeholders to explain how their actions impact the Caspian environment
  - Specifically to educate the Ministries that are affecting the environment and to those whose actions unwittingly reduce the environmental quality of the Caspian waters.
  - Employ NGO networks to help educate people about the programmes intended to minimize negative environmental impacts. This may be done through a small grants programme like that already in place with the World Bank
  - Encourage NGO and industry partnerships for environmental education in the region.
  - Educate NGOs about the potential hazards of invasive species, and assist them in developing public awareness programmes to monitor for these organisms.
  - Educate those who are involved in the unintentional import of exotic species into the Caspian about the potential ramifications of their activities. The survey suggests that the multinational corporation stakeholder group is somewhat unaware of the problems that importation of exotic species can produce, they may be willing to make appropriate adjustments to behaviors once they are educated about this. Unfortunately, this is anecdotal evidence at best. However, it may be worth inviting members of IPIECA to join the discussions of the CRTC for exotic species so that they can become better informed about this issue.
2. Support an energy industry oil pollution management regime
  - Incorporation of the Civil Liability Convention for Oil Pollution at Sea may provide a framework for such a programme that many oil companies are currently working under in international waters. Additionally, inclusion of the US Oil Pollution Act of 1990 outlines may be considered for future programmes. This act is one of the most aggressive environmental laws in existence, and accounts for losses to future income from states in the event of a major oil spill.
  - Specifically, develop a programme based on a mutually beneficial economic scenario for the energy, economic, foreign affairs and environmental ministries. If environmental stewardship programmes can be presented in a win-win situational outline, support for these programmes is expected to be stronger and attract the investment in success of multiple stakeholders.
3. Create regional standards for environmental management and measurement.
  - Include a regional management plan that ties to non-energy resource management issues
  - Coordinated coastal management appealed to most survey participants and should be advocated by CEP with support of stakeholder groups.
4. Implement alternative technologies to reduce municipal wastes

- This is especially important in urban areas and areas that are upstream from the Caspian.
5. Introduce agricultural practices to significantly reduce pesticide and herbicide use in the catchment area (CEZ)
    - The Agriculture and Fishing Ministries stakeholder group supports this action and may be able to assist CEP in development and implementation of such a programme.
    - Inclusion of the regional and municipal governments is important here as well, because these groups are both contributors and affected by the problems presented by this issue of unsustainable farming practices.
    - NGO and international grants may be able to assist with this as well as a means to test some new practices. Potentially academic studies funded by agro-industries, such as Ralston Purina, ADM or Con Agra may be interested in testing alternate crops, or alternate farming methods in the region in order to establish a future market base.
  6. Develop environmental monitoring programmes utilizing NGO and oil company coordination, and introduce technologies to reduce industrial wastes
    - Additionally, there develop industrial pollution monitoring with NGOs and industries throughout the region. The preliminary evidence suggests that the industries may be willing to submit to monitoring.
  7. Create realizable fishing restriction enforcement practices, increase monitoring for and minimization of exotic species
    - Specifically create education programmes for policy makers in the Agriculture and Fishing Ministries stakeholder group, Energy Ministry stakeholder group and multinational corporation stakeholder group
    - Develop a system of self-regulated fisheries management that would entail use of licencing, group self monitoring and limiting access to those outside of the regime. Fishermen appear to be supportive of this at this stage. Such programs can be found in other regions, and have met with relative success in the management of common property resources. More in depth information on these institutional mechanisms is available through literature on common property resource management and upon request.
  8. Require use of best available technologies in the Caspian, and so forth.
    - Include use of low impact technologies including biomass energy production or the use of solar ovens instead of traditional resource depleting wood burning ovens in areas subject to deforestation.
    - Advocate governments to reward use of best available technologies in PSAs with Multinational corporations.
    - Perhaps create NGO, CEP rating system for corporations to be publicized both regionally and internationally.
  9. Also a follow up survey of public healthcare provider stakeholder group may be warranted to determine if environmental impacts on human health are becoming critical in the region. There are several groups already working on these issues and liaising with CEP would be beneficial to them and the CEP as well.

- Monitor human health over time. Though this study does not extensively focus on the work of these individuals, it may be advantageous to the CEP to develop a coalition of public healthcare providers to monitor the health conditions of the population around the Caspian region. Tracking trends in human illnesses may provide CEP with an accurate portrait of the environmental impacts on the human population. Additionally, by participating in epidemiological studies in the region, the CEP may access groups that are otherwise unrepresented throughout the region. This may be pursued in collaboration with other organizations such as the World Health Organization.
10. Continue to monitor attitudes in the region and issues of potential conflicts between stakeholder groups. This should include intra-governmental ministerial rivalries that may ultimately tangle CEP objectives into an unsolvable knot of bureaucratic infighting if not managed carefully. Ministries of special concern are the energy ministries, environment ministries, and agriculture and fishing ministries. Additional attention should also be paid to economic ministries, defense ministries and foreign affairs ministries.
- Continue to monitor public opinion in the region and to test for impact and influence of specific regional policy recommendations
  - Continue to publicize activities of CEP throughout the region and internationally among Caspian experts in order to create multiple levels of support for CEP projects and programmes.
  - Continue to coordinate efforts with other international and regional organizations in order to avoid repetition of efforts, programmes and projects.

## **Supplemental Materials**

The level of interest and prioritization for each stakeholder group has been delineated below. For each stakeholder group there is: a description of the organizations, their representation in the stakeholder analysis survey participation on a state by state basis, the group prioritization of the Major Perceived Problems and Issues, group prioritization of root causes, areas of high concern for each MPPI. Additionally, though there were several important stakeholder groups who were not sufficiently represented in the survey, their interests in the issues of MPPI are outlined below as well.

### **Environmental Ministries**

Stakeholder group summary:

The Environmental Ministries in the Caspian region face numerous challenges from antiquated regulatory procedures to declining economic support for the Ministries, to economic incentives for governments to disregard environmental policies currently in existence. Additionally, the potential cooptation of the Environmental Ministries by extractive-focused Ministries also diminishes the enforcement capacity of Environmental Ministries. Nonetheless the embattled Environmental Ministry officials recognize the vast environmental concerns of the region and as a stakeholder group have both a great deal of influence and responsibility for environmental problems. Additionally environmental degradation is also attributed to failures of these Ministries, thus putting these stakeholders in a precarious political position. Further, the relative status of Environmental Ministries varies a great deal across the region. Lower prioritization in Azerbaijan compares to relatively high prioritization in Iran. Further, often these Ministries are used as political fodder by governments seeking to gain advantage in the region claiming environmental concerns as a means to stall economically important resource development and transport in the region. There is also competition within the Caspian states regarding management of the Caspian environment. For example Russia has both the Centre for International Projects as well as Environmental Ministry competing for rights to oversee Caspian environmental issues. This division results in uneven responsibility and chaotic policy implementation.

Participation: Despite these challenges, the Environmental Ministries in the Caspian region appear to remain dedicated to participating in the Caspian Environment Programme. The Regional Stakeholder Analysis Survey was completed by 24 representatives of Environmental Ministries. Nationalities were represented accordingly: Azerbaijan - 6, I.R. Iran - 7, Kazakhstan - 4, Russia - 3, Turkmenistan – 4.

MPPI Prioritization: The Environmental Ministries are involved in most aspects of the MPPIs for the Transboundary Diagnostic Analysis. They rank Decline in Certain Fisheries as the most important MPPI, followed closely by Decline in Biodiversity and Overall Environmental Decline. Alternately, Introduction of Exotic Species and Decline in Coastal Infrastructure and Amenities rank lowest by this stakeholder group.

Root Cause Prioritization: The Environmental Ministries prioritize root causes contributing to environmental degradation as “Lack of Public Awareness” as highest followed very closely by “Lack of Enforcement of Current Laws”. Other highly prioritized root causes are “undefined legal status”, and “lack of advanced technologies”, “Weakness in the rule of law”. The lowest prioritized root causes are “overall poverty”, “lack of property rights” and “water level change”. It is curious to note that the root cause “lack of enforcement of current laws” may pertain to the intended mission of the Environmental Ministries.

Areas of High Concern: There were a number of areas that elicited high level concern from the Environmental Ministry survey respondents. These will be presented for each MPPI specifically. Because each of the MPPIs are related to the Environmental Ministries, each will be addressed here.

**Decline in Certain Fishing Stocks:** This MPPI ranked as the highest level of concern for Environmental Ministries. The mean ranking for the Environmental Ministries was 6.3 of 8 with 2.2 points of standard deviation. Additionally the root causes of environmental degradation lack of enforcement and lack of public awareness may reflect the assumed cause and effect relationship here. The Environmental Ministries stakeholder groups are affected by the decline in certain fisheries because of the environmental ramifications that may result in severe disruptions in the ecosystems. Alternately, they also contribute to problems of over fishing by not adequately enforcing current regulations. Nonetheless, concerns about this issue are both high, and high profile making this an important MPPI for CEP to continue monitoring with regards to attitudes of key stakeholders.

Within the survey Environmental Ministry officials did not reach high levels of consensus strongly agreeing with the statement that "Pollution is the primary reason that there are fewer fish in the Caspian." Rather the survey demonstrates that of those 19 of 24 Environmental Ministries answering this portion of the survey tended to agree somewhat as a whole, with an average of 6.84, however they was wide standard deviation among respondents at 2.59, which suggests that this issue of pollution leading to a decline in fishing stocks is not entirely agreed upon by Environmental Ministry officials in the region.

An issue that did raise a high level of agreement at 7.74 with far less deviation, 1.45, was the statement that "Even if it is illegal, some fish will still be caught for profit." There was a very strong agreement here, with relatively strong consensus. This may reflect the concern that current enforcement procedures are not effective.

With regards to potential fisheries management practices, Environmental Ministry officials believe that a "system of mutually agreed upon fishing limits would be effective for reducing over-fishing in the Caspian" by agreeing with this statement at an average of 7.42 and a standard deviation of 1.92. There was relatively small variation among survey respondents in this stakeholder group, though the believe that this may effectively limit the over fishing, implementation of such a programme may be more difficult than anticipated.

In addition to concerns listed above, the Environmental Ministries in general felt that there were not sufficient hatcheries to support fishing stocks. The average was 3.10 with a standard deviation of 1.17 in response to the statement "There are enough hatcheries to support all commercial fishing stocks". Though this seems to be self evident, that Environmental Ministries specifically note this and have a relatively high level of agreement on this, suggests that they may be supportive of increasing hatcheries in the region.

**Degradation of Coastal Landscapes:** This MPPI ranked sixth highest concern (of eight) for Environmental Ministries. This relatively low ranking was an average of 4.6 out of 8 with 2.3 points of standard deviation. There are no

specific root causes that respond directly to this issue. This issue is much lower profile in comparison to some others, such as decline in certain fisheries or pollution from oil and gas activities. Nonetheless, the problems of the degradation of coastal landscape affect Environmental Ministries because they have strong environmental components for both the marine and coastal eco-system. Further, the Environmental Ministries stakeholder group contributes to these problems by failing to adequately enforce current environmental regulations.

There was a very high level of agreement at 8.4 with a standard deviation of 0.95 among Environmental Ministries regarding the need for educating farmers about alternate, low impact farming techniques to reduce runoff. The consensus of this particular question was quite high as well with less than 1.0 standard deviation out of 9.

Additionally, there was a very light level of agreement regarding the need to have a coordinated coastal management plan in the Caspian (8.3) with very little deviation regarding this need. (0.8) One may surmise that this is due to the recognition that many of the environmental problems in the Caspian are transboundary in nature, and can only be remedied with mutual cooperation.

Other issues related to degradation of coastal landscapes, such as introducing a market based system of water management for crop irrigation, landscape degradation caused by human activities and the need to strengthen environmental laws in the region to protect natural resources were not readily agreed upon by survey participants in the Environmental Ministries. Additionally, the standard deviations for these issues remained well above 2.0, suggesting that these issues are not clearly agreed upon by members of the Environmental Ministry stakeholder groups.

**Threats to Biodiversity:** This MPPI ranked as the third highest concern among members of the Environmental Ministries stakeholder group, with a mean ranking of 6.04 and standard deviation of 1.5. The loss of biodiversity is reflected in a series of sub issues where there is a fairly high level of consensus among Environmental Ministry stakeholders. Loss of biodiversity due to anthropogenic activities affects Environmental Ministries stakeholder groups. Often, the mission of these ministries is to protect wildlife, and this is one of the more visible venues for these ministries to participate in governance institutions. Like other MPPIs, failure to enforce existing regulations, inability to plan on regional basis and competition with other ministries over multiple usages of certain resources leads to the environmental ministries stakeholder groups contribution to the perceived decline in biodiversity. Additionally, the lack of reliable long term stock assessments hamper overall understanding of population fluctuations. Despite these bedeviling challenges, the environmental ministries stakeholder group recognizes the importance of preserving biodiversity in the region.

The statement "There should be a network of marine and wetland preserves all around the Caspian" elicited high levels of support from Environmental Ministries, with fairly high levels of consensus. (7.9 and 1.6, respectively) Though this is expected among members of this stakeholder group, this confirms that there is an awareness of the need for coordinated action in the region.

In response to the statement “My organization supports strengthening laws protecting sensitive areas even if it limits access to those areas” the response was an average of high level of agreement at 7.8, though the variation was somewhat broader at 2.1.

The issue of agricultural and industrial runoff having negative impacts on the wildlife of the Caspian ranked high as well at 7.6, with standard deviation at 1.9. The recognition of this issue is expected among these groups, though confirmation of this support may be helpful in regards to the formation of policy recommendations.

There was relatively low levels of agreement with the statement “The environment of the Caspian is not suffering” with an average of 2.4 and standard deviation of 1.7.

The Decline in Overall Environmental Quality: This MPPI ranked as the second highest concern for Environmental Ministries stakeholders at 6.08, with a standard deviation of 1.8. The root causes for this include regional poverty and lack of public awareness, which Environmental Ministries rank as high priority issues. The decline in overall environmental quality both affects and is contributed to by environmental ministries stakeholder groups. This relationship is dynamic in many ways as the inability to monitor or enforce changes leads to decline which leads to the inability to monitor or enforce necessary changes. These groups lack regulatory enforcement capacities, poor budgets, outdated assessment technologies and have minimal political clout as a rule. However, over all environmental decline due to political wrangling, lack of funds, strains on national budgets and lack of political will only stands to become more pronounced if left unattended by national governments.

There is no clear agreement on the adequacy of environmental information available about causes of environmental decline in the region. (5.4 mean with a standard deviation of 2.9) The data suggests that there is little cohesion among opinions of this group regarding the statement “There is adequate scientific knowledge about the causes of environmental decline in the Caspian.” Respondents either agreed or disagreed more strongly. There was only one of 20 respondents who had no opinion on the issue. There was wide geographic variation in both groups who agreed and those who disagreed. Given that these are the institutional body that we would expect to oversee such information gathering and analysis, this lack of stakeholder group consensus informs us that this division may be worth monitoring in the future.

In contrast, there was strong agreement that “there should be more environmental monitoring projects that involve NGOs, scientists and private sector collaboration” with the mean agreement at 8.1, and standard deviation low at 1.1.

In regards to the private sector, the Environmental Ministries overall favored the statement that “Private industry should take all responsibility for reversing environmental degradation of the Caspian”. (7.4 mean with 1.9 standard deviation) It is difficult to gauge if this high level of support represents the sentiment that the private market will be able to manage this, or if the environmental degradation is a result of private industry activities and therefore they

should bear the costs of cleaning this. Again, given that the environmental ministries may be charged with overseeing this activity, CEP attention these attitudes may be appropriate.

There was also clear agreement with the statement “Better technology for environmental preservation would enhance the Caspian region” with an average of 7.5 and standard deviation of 1.8

**Decline in Human Health:** This MPPI ranked as the fourth highest priority concern for the Environmental Ministries stakeholder group, with a mean of 5.29 and a standard deviation of 1.8. Though human health matters are not directly the concern of environmental ministries, the ramifications of poor environmental conditions can significantly affect human health. Though the environmental ministries stakeholder group is somewhat affected by a decline in human health as coastal residents, they are more directly contributing to the decline by failing to enforce stringent environmental regulations currently in place. Similarly the inability to do this may have secondary ramifications if the health of populations decline in the future if difficult conditions are exacerbated by further economic decline or natural disaster.

The issue of access to safe drinking water divided the Environmental Ministry stakeholder group fairly evenly. Though mean was 6.3, the standard deviation was 2.75. The raw data shows that there was either fairly strong agreement, or fairly strong disagreement on with the statement “In the Caspian region, the biggest threat to the human population is the lack of safe drinking water.” There was wide geographic variation among both groups, signifying that this is not a state specific concern.

The issue of radiation and the effects on human health have not been widely addressed by the CEP. However, members of the Environmental Ministries were in relatively strong agreement that “Radioactive materials have led to a decline in human health.” Though the mean was only 6.8, the standard deviation of 2.4 belies that there are two respondents who disagreed while the remaining 17 respondents agreed strongly to very strongly with this statement. This may warrant further study in the future.

Other human health issues that were especially important were agreement that the human health should be the concern of the government, and the commonly held belief that human health conditions could be improved in the region.

The highest level of agreement for the Environmental Ministries is the sentiment that “People would be healthier if the environment were cleaner”. The average ranking for this was 8.6 and the standard deviation was 0.8. This signifies that the Environmental Ministries recognize that environmental degradation affects human health directly. This linkage between human health and the environment may be a very helpful in influencing policy maker support for environmental improvements.

Damage to Coastal Infrastructure and Amenities: This MPPI ranked very low among members of the Environmental Ministries stakeholder group. The average ranking is 4.7 out of 8, with a standard deviation of 2.4. This relatively large standard deviation suggests that while some members of this group see this as a higher level concern, others see it as a much lower level concern. The variation is almost equally spread between among the states, though northern Caspian states tend to rank this slightly higher than the southern Caspian states. The Environmental Ministries are both affected by and are contributing to the damages to coastal infrastructures, both by failure to enforce existing environmental regulations and by damage to environmental systems resulting from the damage to coastal infrastructure. This issue of soil erosion is a high level concern for Environmental Ministries in particular.

There was fairly high level agreement regarding the concern that soil erosion contributes to the decline in environmental quality in the Caspian, with a mean ranking of 7.35, and standard deviation of 1.72. This variation is spread among all regional participants

The issue of negative environmental impacts of mining in the region also elicited a high level of concern among environmental ministry stakeholders. The statement "Mining activities reduce the water quality of the Caspian" was ranked with high level agreement at 7.45 mean and 1.82 standard deviation. There was an equal spread among regional representatives.

There was lower levels of support for statements relating to municipal waste disposal into the Caspian and issues of sea level fluctuation causing most environmental damage in the region. Though this issue did not rank highly among members of this stakeholder group, there may be a latent effect that is currently not recognized among stakeholders. Should infrastructure related disasters occur, this would be expected to become a much higher level concern.

Potential Damage from Oil and Gas Development: This emerging MPPI ranked lower among Environmental Ministry stakeholders than might have been expected. The overall ranking was 5<sup>th</sup> at 4.67 average with a standard deviation of 2.4. This relatively large standard deviation suggests that there is not a clear consensus among Environmental Ministries about the increased ramifications of the oil and gas activities in the region. The Environmental Ministries in major oil producing states tended to feel more strongly about this than those states that produce more natural gas. This may be a result of the difference in potential environmental ramifications of oil extraction and transportation compared to that of natural gas. The Environmental Ministries stakeholder groups are both contributors to and affected by this, based on the failure to implement existing environmental laws and regulations, especially as PSAs are developed. Additionally, the Environmental Ministries stakeholder group is affected by the perception that oil pollution is especially problematic in the Caspian region and that they are not effectively minimizing environmental degradation. Further, the actual negative impacts of oil and gas activity in the Caspian results in the damage to the environment of the Caspian.

There is the perception among Environmental Ministries stakeholders that the oil and gas industry does not care about the environment of the Caspian. With a mean of 6.0 and a standard deviation of 2.2.

However, wide variation among stakeholders regarding this sentiment and the belief is almost equally spread across states in the region at all levels.

The concern that the environment of the Caspian can not be preserved at the same time as the oil drilling activities is similar to the statement above with 6.4 mean and 2.6 standard deviation. Again this is spread evenly across the states.

Among Environmental Ministries stakeholders there is the belief that use of best available technologies will diminish environmental degradation in the region. Though this belief is especially representative of many in the region, use of new technologies may in fact improve the environmental conditions in comparison with outdated technologies used in the past in the region.

The Environmental Ministries stakeholder groups support a “petroleum based legal agreement for marine pollution from oil (to) reduce oil pollution in the Caspian.” by an average of 7.4 and a standard deviation of 2.01. This suggests that the Environmental Ministries would support such an agreement by the oil companies and energy ministries, if one could be reached. This support may in turn both strengthen the Environmental Ministries in the region by legitimizing their role in the regulatory processes. However, the sample size here is not large enough to assume that these Environmental Ministries stakeholders sufficiently represent those who may be charged with making the final decisions about this matter.

The Environmental Ministries stakeholders do not feel that there are adequate oil reception facilities in the Caspian region. Though there is not clear agreement on this over all, the general belief is that these are not being met.

Introduction of Exotic Species: This emerging MPPI is the lowest ranking concern for members of the Environmental Ministries stakeholder group. The average rank is 3.25, with a standard deviation of 2.8. Those who rank this as a high priority concern are from various Caspian states. It may be hypothesized that the Environmental Ministries stakeholders from Russia would rank this as a higher priority issues because of their experiences with invasive species in the Black Sea region. However, due to a lack of survey data from Russia it is not possible to verify this. On the other hand, it is worth noting that none the Russian participants ranked the threat of invasive species below a 4 out of 8. The threat of invasive species may be a latent concern for members of the Environmental Ministries stakeholder group, due to other pressing concerns. However, if there is such a scenario with invasive species as was seen in the Black Sea, the ramifications for the Environmental Ministries may be quite significant. Additionally, failure to take this threat seriously now may impinge on the ability to minimize damages in the near future.

With regards to actual monitoring of invasive species, members of the Environmental Ministries stakeholder group have a very wide variation of responses. In response to the statement “I have seen unusual creatures in the Caspian that were not there ten years ago.” the mean was 4.95 and the standard deviation was 2.95. This variation is widely spread across the region with no individual state exhibiting higher incidences of citations of these species.

With regards to the statements “ All steps should be taken to limit invasive species that threaten the ecosystem” and “Invasive species are creating significant environmental degradation in the Caspian” the responses were averages at 7.10 and 6.79 with standard deviations at 2.38 and 2.27, respectively.

The lack of information about the potential damage to ecosystems from invasive species may be partially responsible for these lower turnouts among these groups.

## **Agriculture and Fishing Ministries**

### Stakeholder Group Summary:

The Agriculture and Fishing Ministries stakeholder group is widely represented in the region. Because of the high visibility of fishing activities in the Caspian region, combined with the negative externalities of agricultural production in the region, the Agriculture and Fishing Ministries stakeholder group is significant to a number of the Major Perceived Problems and Issues. The environmental ramifications of these groups activities in the region are also widespread. If fishing stocks are overly depleted, even beyond some current levels, agricultural runoff results in serious damages with pesticides. In general the perception is that these ministries wield significantly more power both in terms of economic influence and regulatory capacity than environmental ministries in many of the Caspian states. The economic influence of course is rooted in the perception that the economic value of the good created by these industries translated into political power. With regards to the fishing ministries influence, this is somewhat checked by the perception of the abuse of power in the Former Soviet states in combination with diversion of economic resources from those segments of the fishing industry which support the sustainable harvest of certain commercially valuable species. Though not all of the MPPI pertain directly to the Agriculture and Fishing Ministries stakeholder group, those which do directly affect or are contributed to by this group will be examined here.

Participation: The Regional Stakeholder Analysis Survey was completed by 18 representatives of the Agriculture and Fishing Ministries stakeholder group. Nationalities were represented accordingly: Azerbaijan - 2, I.R. Iran - 9, Kazakhstan - 5, Russia - 1, Turkmenistan – 1. As a result, the information provided by this stakeholder analysis is biased towards Iranian and Kazakh interests. However, given that each state was theoretically given the option to complete equal numbers of the survey this may tell us that either these ministries were not penetrable by the MAGICAs and PPAs that approached them, or that these ministries were not widely represented overall. In several cases, I suspect it is the former rather than the latter. Nonetheless the results that we currently have available are informative for these purposes.

MPPI Prioritization: The highest priority issue for the Agriculture and Fishing Ministries stakeholder group was surprisingly the Decline in Biodiversity. This was followed by Decline in Human Health and Decline in Certain Fisheries, which tied. The lower priority issues were Introduction of Exotic Species, Degradation of Coastal Landscape and Decline in Coastal Infrastructure and Amenities as the lowest concerns.

Root Cause Prioritization: The Agriculture and Fishing Ministries stakeholder group ranked “Lack of Sufficient Enforcement of Current Environmental Laws as the most important root cause. This was followed by “Regional Poverty”, “Lack of Advanced Technologies”, and “Undefined Legal Status ” as very important root causes. Low importance root causes include “Regional Overpopulation”, “Abuse of Power”, “Lack of Property Rights”, “Sea Level Change”

and “Weakness of Civil Society”. Again, it is important to recognize that this is from a sample which strongly favors Iranian and Kazakh views.

Areas of High Concern: There are a number of issues that elicit a high level of concern among the Agriculture and Fishing Ministries stakeholder group.

1. **Decline in Certain Fisheries**: This MPPI naturally ranks as a high priority concern for the Agriculture and Fishing Ministries stakeholder group. There were a number of issues that elicited high level responses from this stakeholder group which should be noted here. Certainly members of this stakeholder group both contribute to and are affected by this MPPI. They play an integral part in the development of hatcheries, maintenance of state owned fisheries, and oversight of fish takes in the region, at least in theory, if not in practice. Additionally, these stakeholders depend on maintaining a regulatory balance with regards to these resources, both in terms of encouraging the fishing industry and in managing fisheries so that they do not become irreparably depleted.
  - The Agriculture and Fishing Ministries stakeholder group recognize and admit that there is illegal trade in some fish. In response to the statement “Even if it is illegal, some fish will still be caught for profit.” The response of the Agriculture and Fishing Ministries stakeholder group was very high agreement at 7.64 mean and standard deviation of 1.6. This was spread evenly across the regions.
  - Similarly the Agriculture and Fishing Ministries stakeholder group strongly agreed that “People, other than fishermen make money from illegal fishing of some species” with an average level of agreement at 8.57 and standard deviation of 0.63. Both of these issues suggest that though abuse of power is ranked as a low concern root cause, there is the awareness that this is a driving problem for the fishing industry. Additionally this may be equated with the perception that the root cause “Lack of sufficient enforcement of current environmental laws” accounts for the illegal nature affecting the fishing industry.
  - The third high level concern issue in regards to decline in certain fisheries is the high level agreement with the statement that “All barriers to fish migration should be removed”. The average for this statement was 8.07 with a standard deviation of 1.44. Though this may be interpreted several ways, it is worth noting that over half of the respondents agreed strongly, and that they represented the almost all Caspian states.
  
2. **Degradation of Coastal Landscape**: The Agriculture and Fishing Ministries stakeholder group considers this MPPI to be a low level concern in comparison to other MPPIs. They contribute to this issue by advocating the use of irrigation on crops, thus diverting water flow to the Caspian. Additionally they contribute by allowing the use of certain fertilizers, herbicides and pesticides to be used on crops. Often these are over used and end up getting flushed down to the Caspian. Especially notable among these is the use of DDT.
  - There was a high level of agreement on in regards to the statement “Farmers using herbicides and pesticides should be taught natural ways to reduce use of these chemicals. (For instance: organic farming methods, crop rotation, more appropriate crop selection based on climate and soil, genetically engineered crops, training education, other chemicals or synthetics.)” The level of agreement was 8.25, with a standard deviation of 1.57. This suggests that the ministry representatives who would be involved in the implementation of such educational programmes would also be supportive of this. There was even distribution across the Caspian states in the response to this question.
  - Additionally, the Agriculture and Fishing Ministries stakeholder group strongly supported the statement “Current laws are not strong enough to protect

natural resources around the Caspian.” The average was 8.28 and the standard deviation was 0.89. This suggests that these groups recognize that current systems are not effective for protecting the Caspian eco-system

3. Threats to Biodiversity: The Agriculture and Fishing Ministries stakeholder group ranked this MPPI as the highest level concern among the issues presented. They are heavily involved in this issue as contributors to this issue, and to some degree as those affected by this issue as well. They contribute to this issue by favoring some species over others in agriculture, use of lands and irrigation for farming, and pesticide usage which affects the waters of the Caspian. Additionally, the fishing aspect of these ministries relies on a semi-balanced eco-systems in order to function properly.

In response to the statement “There should be a network of marine and wetland nature preserves all around the Caspian” there was overwhelming support from the Agriculture and Fishing Ministries stakeholder group. The average was 8.05 and the standard deviation was 1.00

In response to the statement “My organization supports strengthening laws to protect sensitive areas even if it limits access to those areas.” The support was a sound 7.39 mean with a standard deviation of 1.94.

In response to the statement “It is necessary to protect fish spawning sites in the Caspian” the Agriculture and Fishing Ministries stakeholder group agreed at 8.05 average and 1.05 standard deviation. These three preceding statements suggest that the Agriculture and Fishing Ministries stakeholder group would support some programmes that would link environmentally protected areas to their activities in the region. However, it is not entirely clear that this assumption is supported. Nonetheless, there were other instances where this stakeholder group had some interesting responses.

An example of this includes the agreement with the statement “ Agriculture and industry wastes flowing into the Caspian threaten marine and coastal species.” The Agriculture and Fishing Ministries stakeholder group agreed with this at an average of 8.05 and a standard deviation of 1.05. Though this may allow members of this group to focus on industrial pollution predominantly, it nonetheless reflects an awareness that this is problematic. Further, the variation is evenly spread among the Caspian states suggesting that this is not a state specific phenomenon. One caveat to this is the concern that there is only one respondent from the Russian Federation in this stakeholder group, and this may bias the responses somewhat, given that a significant majority of the water flow into the Caspian comes from the Volga which is within the territory of Russia.

4. Decline in Overall Environmental Quality: The Agriculture and Fishing Ministries stakeholder group ranked this as a mid level concern among the MPPs presented. The Agriculture and Fishing Ministries stakeholder group contributes to the overall decline in environmental quality by allowing the use of certain pesticides that flow into the Caspian and harm certain species. Both the seal die-offs and the kilka die-offs have been linked to excessive pesticide residues in the Caspian waters. Additionally, the Agriculture and Fishing Ministries stakeholder group is affected by the decline in overall environmental quality because this decline reduces the reproductive and capacity to thrive.
  - The one issue specifically related to decline in overall environmental quality is the consensus that “There should be more environmental monitoring projects that involve NGOs, scientists and private sector collaboration.” The

stakeholders ranked this at 7.61 mean and 1.85 standard deviation. This suggests that the Agriculture and Fishing Ministries stakeholder group may be willing to be monitored by these groups in the future. However, before a widespread program is attempted it would be advantageous to survey a broader section of this stakeholder group.

- Additionally, as mentioned in the previous section above the Agriculture and Fishing Ministries stakeholder group appears to be amenable to project aimed at reducing agricultural run-off into the Caspian. The high level of agreement here may indicate a recognition that this is reducing overall environmental quality in the region. Though this recognition may be perceived as a minor step, it may indicate a potential inroad for CEP to work with these groups to improve overall environmental quality.
5. Decline in Human Health: The Agriculture and Fishing Ministries stakeholder group ranked this MPPI as a top level concern. Though there are few direct linkages between human health conditions and the activities of the Agriculture and Fishing Ministries stakeholder group, this stakeholder was in high level agreement on several issue pertaining to this issue. The variation for these is distributed evenly across Caspian states.
- There was unusually high agreement and consensus among Agriculture and Fishing Ministries stakeholder group with regard to the statement “People would be healthier if the environment were cleaner.” The average for this group was 8.35 and the standard deviation was only 0.78. This may be reflective of the Agriculture and Fishing Ministries stakeholder group members living in the region. Alternately, it may also be reflective of an awareness that current environmental practices in the region are causing illness among humans as well as other species.
  - This ties in again with the statements above in section 3 regarding the need to better manage agricultural runoff and finding alternate technologies for more environmentally sound agricultural practices.
6. Damage to Coastal Infrastructure and Amenities: This MPPI ranked as a low level concern by the Agriculture and Fishing Ministries stakeholder group. There is only one issue related to this MPPI that involves this stakeholder group. Specifically they contribute to soil erosion as farming practices result in decreased stability of soils in the region. This includes over grazing, monoculture and farming in drained or altered wetlands. Simultaneously, they are affected by erosion as it affects the fishing industry.
- The agreement with the statement “Soil erosion contributes to the decline in environmental quality of the Caspian” was very high at 8.33 mean and 0.77 standard deviation. This suggests that the awareness of this issue is a priority concern for the Agriculture and Fishing Ministries stakeholder group, though the damage to coastal infrastructure and amenities may not be perceived to be initially. Further, this may be an area where CEP would be able to expect support from the Agriculture and Fishing Ministries stakeholder group.
7. Potential Damage from Oil and Gas Development: This MPPI ranked as a lower level concern for the Agriculture and Fishing Ministries stakeholder group. There is a perception that there is potential for a great deal of conflict between the Agriculture and Fishing Ministries stakeholder group and the Energy industry as development of Caspian oil and gas deposits increase. However, this has not been starkly reflected in the survey data. Nonetheless, there are areas that bear monitoring as attitudes about

this relationship become more salient. The Agriculture and Fishing Ministries stakeholder group is not a contributor to the environmental ramifications of this MPPI. However, they would be affected in the event that a large scale oil spill occurred in the region. Alternately, even if less sensational events occur there could be significant negative ramifications for the Agriculture and Fishing Ministries stakeholder group.

- Especially worth noting is the perception among the Agriculture and Fishing Ministries stakeholder group that “Multinational Corporations and the energy industry do not care about the environment.” The Agriculture and Fishing Ministries stakeholder group agrees with this at a 7.50 average and a standard deviation of 1.67. The variation is evenly spread across the states of the region, with no particular state ranking higher or lower than the others.
  - Issues such as the use of best available technologies, petroleum based legal regimes and adequacy of oil reception facilities did not merit high levels of concern among the Agriculture and Fishing Ministries stakeholder group.
8. Introduction of Exotic Species: This emerging MPPI is one of the lowest ranking concerns for the Agriculture and Fishing Ministries stakeholder group, in comparison to the others. However, in regards to specific sub issues this stakeholder group actually quite high levels of concern. The Agriculture and Fishing Ministries stakeholder group may potentially be very heavily impacted by this emerging MPPI if invasive species disrupt the food chain like they did in the Black Sea. Though the Agriculture and Fishing Ministries stakeholder group will be affected by this issue, they may also become very strong advocates of precautionary measures to reduce introduction of these species into regional waters.
- The issue of the presence of invasive species in the region was not one of high level consensus or concern. However, the respondents from the Agriculture and Fishing Ministries stakeholder group did have some agreement on this issue that was distributed among most of the Caspian states.
  - The issue of limiting invasive species in the Caspian attracted high level of agreement and strong consensus. The statement “All steps should be taken to limit invasive species that threaten the eco system” was strongly supported at 8.44 average and 0.70 standard deviation.
  - The statement “invasive species are creating significant environmental degradation in the Caspian” had a 7.59 level of agreement and 1.90 standard deviation. Again, the responses here were widely spread across the states in the region.
  - This signifies that the presence of invasive species is being observed in the region and that there may be cause to believe that this stakeholder group may be a very strong ally in regards to the formation of a regional policy to require practices to limit these species.
  - Additionally, it is worth noting that the Agriculture and Fishing Ministries stakeholder group ranks individual questions for this MPPI as a much higher level concern than other stakeholder groups, including the International Corporations, Energy Ministries and Environmental Ministries. This is worth monitoring by the CEP and may be a key component of CEP activity in the future, especially focusing on education of stakeholder groups about this issue.

### **Energy Ministries**

Stakeholder Group Summary: The Energy Ministry stakeholder group is very important in the Caspian region given their high level of influence in the governments of the Caspian states. Further, because the energy industry is expected to yield significant economic benefits for the

region, their activities are worth monitoring. The environmental ramifications of these activities are of concern to stakeholders throughout the Caspian region and beyond. Though the Energy Ministry stakeholder group may not recognize that it is a contributor to environmental issues in the Caspian it often is.

Participation: The Regional Stakeholder Analysis Survey was completed by 6 representatives of the Energy Ministry stakeholder group. Nationalities were represented accordingly: Azerbaijan - 2, I.R. Iran - 2, Kazakhstan - 0, Russia - 0, Turkmenistan – 2. The lack of representation is a result of incomplete survey distribution in Kazakhstan and the Russian Federation. Despite these deficiencies the information provided by the somewhat skewed sample should be viewed as informative, even if it is limited.

MPPI Prioritization: The Energy Ministry stakeholder group ranked decline in certain fisheries as the top priority MPPI, followed by decline in human health and decline in biodiversity. Lower concern MPPIs were degradation of coastal landscape, decline in infrastructure and amenities, and introduction of exotic species. Pollution from oil and gas ranked as a lower mid-level concern at 3.7 average with a 3.3 standard deviation. Concerns were much higher in I.R. Iran than in other represented states.

Root Cause Prioritization: The root causes that elicited the highest level of concern among the Energy Ministry stakeholder group were lack of advanced technologies, Lack of sufficient enforcement of current environmental laws, undefined legal status, lack of public awareness of environmental problems and weakness in the rule of law. Low level root causes were regional overpopulations, abuse of power, lack of property rights, sea level change, and weakness in civil society. The variation for these was fairly evenly distributed across the represented states in the region.

#### Areas of High Concern:

1. **Decline in Certain Fishing Stocks:** The Energy Ministry stakeholder group is not directly affected by or contributors to the MPPI decline in certain fishing stocks. Though there may be a perception that these stakeholders contribute to this, there is not sufficient evidence for this.
  - The exception to this may be the issue of hydroelectric dams that act as barriers to fish migration. In response to the statement “All barriers to fish migration should be removed” the average response was 7.17 in favor of this, with a standard deviation of 2.56. It is important to note that those who most strongly favored this were from all of those states represented. However, because a great deal of the damming of rivers occurs in states not represented in the region, it would be a faulty conclusion to believe that removal of dams in order to enhance fish migration.
2. **Degradation of Coastal Landscape:** The Energy Ministry stakeholder group is involved in the MPPI degradation of coastal landscape because they often are a key contact organization for oil and gas exploration and development. Therefore they play an important role in issues related to this economically critical activity.

The first statement to consider here is “It would be helpful to have coordinated coastal management plans in the Caspian region to help preserve the environment.” The level of agreement is astoundingly high at 8.83 with a standard deviation of 0.04. In other words, all of the Energy Ministry stakeholder group surveyed agreed strongly/ very strongly with this plan. This may indicate a very important role for CEP as a catalyst for policy coordination.

3. Threats to Biodiversity: Though the Energy Ministry stakeholder group rank this as a relatively high level concern, there is little direct impact on biodiversity. Indirectly there is the concern that these Energy Ministry stakeholder groups have more influence on actual policy development. Therefore issues such as the very central issue of the need to protect habitats instead of develop economic resources in the region.
  
4. Decline in Overall Environmental Quality: The Energy Ministry stakeholder group ranks this MPPI as a midlevel concern in comparison to the others. The Energy Ministry stakeholder group actually is minimally affected by this issue and contribute only indirectly.
  
5. Decline in Human Health: Though the MPPI was the second highest concern for the Energy Ministry stakeholder group, they have very little direct impact on this issue and are only indirectly affected by this.
  
6. Damage to Coastal Infrastructure and Amenities: The Energy Ministry stakeholder group rank this as a low level concern. Additionally though they contribute to this damage by increasing demands on the infrastructure via energy development, these issues are more appropriately addressed in under the auspices of that subject matter. Other coastal infrastructure issues are only indirectly related to the Energy Ministry stakeholder group.
  
7. Potential Damage from Oil and Gas Development: The Energy Ministry stakeholder group is very closely linked to concerns about potential damage from oil and gas development. The Energy Ministry stakeholder group is a direct contributor to this MPPI. It is only indirectly affected by this. Because Energy Ministry stakeholder group wield strong economic powers in national governments, and because they also have closest contact with those agencies charged with overseeing infrastructural issues.
  - The only issue that elicited a high priority concern for the Energy Ministry stakeholder group is the statement “A petroleum industry based legal agreement for marine pollution from oil would reduce oil pollution in the Caspian.” The average level of support for this was 7.67 with a standard deviation of 1.5. The distribution of this was evenly spread across the represented states in the region.
  - Other issues such as use of best available technologies to improve environmental outputs, or the adequacies of oil reception facilities elicited a tepid response from the Energy Ministry stakeholder group. This suggests that the environmental ramifications of their work is not a high priority, especially in regards to extraction and transportation. This should be compared with the perceptions of the Multinational oil companies.
  - In regards to the statement “Multinational corporations and the energy industry do not care about the environment.” The agreement was very mixed with a mean of 5.0 and a standard deviation of 2.5. This may be somewhat concerning, unless the translations implied that these groups should “care for” the environment, rather than about it in more general

terms. Nonetheless, this may be worth monitoring, as many other stakeholder groups agreed strongly with this statement.

8. Introduction of Exotic Species: This MPPI was a very low level concern for the Energy Ministry stakeholder group. While they are only peripherally associated with this issue, the opinions of this power body is important to consider, especially as increased energy industry activities may be responsible for increased introduction of some invasive exotic species.
  - In response to the statements regarding invasive species, the Energy Ministry stakeholder group was very unenthusiastic. However, this may be a direct result of the lack of knowledge about this issue in the region, and among this stakeholder group in particular. Especially telling is the 6.17 average response (with 2.56 standard deviation) to the statement “all steps should be taken to limit invasive species that threaten the ecosystem.” Though the response is generally in agreement, the relative tepidness of it may point to a lack of understand of the implications of the energy industry activities on this issue. Educating this stakeholder group about this issues may be a very important role for CEP to consider pursuing.

### **Regional and Municipal Governments**

Stakeholder Group Summary: Regional and Municipal governments are often caught in a precarious situation with regards to the environment of the Caspian. They are both responsible to the citizens of their regions and to the federal government as well. As addressed in the TDA Socio-Economic Summary, the geographic boundaries of these divisions is somewhat difficult to gauge because they do not correspond actual environmental boundaries. On the other hand, the activities that occur within the municipal and regional districts buttressing the Caspian are often both directly contributing to the environmental issues of the Caspian and affected by these environmental issues.

Participation: For the sake of this study, municipal and regional governments were combined due to a low response rate from both groups. The Regional Stakeholder Analysis Survey was completed by five representatives of regional governments. Nationalities were represented accordingly: Azerbaijan - 0, I.R. Iran - 0, Kazakhstan - 0, Russia - 4, Turkmenistan – 1. There were six municipal government officials who completed the survey. Nationalities were represented accordingly: Azerbaijan - 2, I.R. Iran - 1, Kazakhstan - 0, Russia - 1, Turkmenistan – 2. Combined, there were eleven regional and municipal government stakeholders. Though Kazakhstan is not represented here, it may be assumed that at least some of these concerns extend to them as well.

MPPI Prioritization: The most important ranked MPPIs for the regional and municipal government stakeholder group was overall environmental quality followed closely by the decline in certain fisheries. The lowest priority MPPIs were degradation of coastal landscapes, decline in coastal infrastructure and amenities, and potential pollution from oil and gas activities.

Root Cause Prioritization: Of the root causes listed the highest ranking concerns for regional and municipal government stakeholders were the non-sustainable use of resources, and lack of advanced technologies. The lowest ranked concerns were regional overpopulation, the abuse of power, lack of property rights.

### Areas of High Concern:

1. **Decline in Certain Fishing Stocks:** The regional and municipal government stakeholder group is both a contributor to the decline in certain fisheries and is affected by this MPPI. The contribution is due to the lack of enforcement of existing environmental laws, and poor economic conditions that make over dependence on this resource a necessity for some. On the other hand, the decline in certain fishing stocks also affected the regional and municipal government stakeholder group by lowering the legal economic trade of some of these species, thus encouraging the abuse of power. Additionally, it represents a decrease in available high quality food stocks for citizens in these areas, which may lead to political instability, especially coupled with power abuse issues.

There was very strong agreement with the statement “Even if it is illegal, some fish will still be caught for profit” at 8.13 average and 0.83 standard deviation. Additionally, there was a similarly high level of agreement with “People, other than fishermen, make money from the illegal fishing of some species” at 8.14 average and 1.86 standard deviation. This signifies is the recognition that there is a strong illegal trade in some species. This high level of agreement does not reflect the root cause prioritization, which may be explained by the deflection of blame from one group that might be considered a prime suspect in the abuse of power.

Interestingly, there is also a strong agreement with among the regional and municipal government stakeholder group with the statement that “An enforced system of mutually agreed upon fishing limits would be effective for reducing over-fishing in the Caspian.” The mean was 7.62 with a standard deviation of 1.77. The support for this was almost evenly spread among the represented states in the region. Russian support was slightly lower overall, however.

2. **Degradation of Coastal Landscape:** With regards to this MPPI the regional and municipal government stakeholder group is both affected and contributing. This stakeholder group contributes to this by overuse of certain herbicides and pesticides, population incursions into sensitive areas, and inappropriate citing of industry. It is affected because the degradation of the coastal landscape reduced the quality of these areas, and the human benefits in these regions. Additionally, the regional and municipal government stakeholder group is affected because the diminished state of these also negatively impacts quality of life for citizens, and may reduce the ability of governments to meet the needs of these impacted individuals.

- The regional and municipal government stakeholder group strongly supports the use of alternate farming practices to reduce herbicide and pesticide use in the region. In response to the statement “Farmers using herbicides and pesticides should be taught natural ways to reduce use of these chemicals” the agreement was an average of 8.0 with a standard deviation of 0.83. Though this stakeholder group is not directly responsible for this, their support may be key in implementing an agricultural education program in the Caspian region.
- In response to the statement “It would be helpful to have coordinates coastal management plans in the Caspian region to help preserve the environment” the average agreement was a strong 8.25 with a standard deviation of 0.97. Though this is promising, in response to the statement “there should be limits on some activities in certain zones of the coastal region” the response was quite mixed with a mean of 5.5 and a standard deviation of 3.0. Azeri respondents strongly agreed, a Russian respondent was unsure and an Iranian disagreed. This regionalization of the issue was not represented in the previous strongly supported

statement. This may be in part due to translation issue, or it may represent a disparity among states should be handled with some sensitivity. However, it may also be a case of a very few individuals responding, and is not clearly representative of these groups.

3. Threats to Biodiversity: The regional and municipal government stakeholder group is a contributor to the decline in biodiversity as lack of planning leads to destruction of habitats. Additionally, the unregulated flow of industrial and agricultural wastes in the Caspian may be reduced if regional and municipal governments were more effective at enforcing current environmental laws. The potential decline in biodiversity does not directly affect the regional and municipal government stakeholder group.

- In response to the statement “My organization supports strengthening laws protecting sensitive areas even if it limits access to those areas.” The average was 7.75 with a 2.26 standard deviation. Again this support suggests that there is strong support among regional and municipal government stakeholder group for collectively managing environmentally important areas in the region. There were relatively evenly shared views among the represented states in the region.
- The issue of agricultural and industrial runoff negatively impacting the Caspian was a high level concern among the regional and municipal government stakeholder group. The mean response was 8.0 with a standard deviation of 1.55 to the statement “Agriculture and industrial wastes flowing in to the Caspian threaten marine and coastal species.” Though there is high level of agreement regarding this, translating this into action may be more somewhat difficult.

4. Decline in Overall Environmental Quality: The regional and municipal government stakeholder group contributes to the decline in overall environmental quality. By failing to implement environmental legislation and adding wastes to the Caspian ecosystem the regional and municipal government stakeholder group adds to the decline in environmental conditions. Alternately, the regional and municipal governments stakeholder group is affected by the decline in overall environmental quality. However the issues specifically focused on decline in overall environmental quality are not listed as high importance for the regional and municipal government stakeholder group.

5. Decline in Human Health: The MPPI decline in human health ranks as mid level concern for the regional and municipal government stakeholder group. They contribute to environmental decline, and decline in human health by failing to implement environmental policies. The regional and municipal government stakeholder group is also indirectly affected by the decline in human health, as costs for human health care are passed to the regional and municipal governments. The low human health conditions also discourage foreign businesses settling in these regions.

- The regional and municipal government stakeholder group responded with tepid agreement to the statement that “In the Caspian region, the biggest threat to the human population is the lack of safe drinking water.” The mean was 6.0 with a standard deviation of 2.45. The Azeri respondents agreed most strongly, while states were less inclined to agree with this statement. This may be reflective of the especially low potable water conditions in Azerbaijan.

- Alternately there was a very high level of agreement by all represented states in the region that “People would be healthier if the environment were cleaner.” The mean was 8.5 with a standard deviation of 0.58. The level of disagreement with the statement “The environment of the Caspian is not suffering” was a sound 1.25, with a standard deviation of 0.50. Further, in response to the statement “Public health must be the concern of the government” the support was a very strong 8.83, with a standard deviation of 0.41.
  - Thus though the regional and municipal government stakeholder group is aware that human health is related to environmental conditions, that the environmental conditions are low, and there government should be concerned about human health, there is not clear prioritization of environmental issues by this stakeholder group. This may be a very important source of recruitment for support of environmental legislation, as well as place to emphasize environmental policy initiatives. It must be noted that the sample is significantly small that follow-up surveys may be recommended with this group in order to more clearly link these.
6. Damage to Coastal Infrastructure and Amenities: The regional and municipal government stakeholder group is both affected by and a contributor to the MPPI damage to coastal infrastructure and amenities. They contribute to it by being unable or unwilling to maintain the infrastructure in a condition that could withstand environmental degradation, storm surges and water level fluctuation, as well as normal wear and tear. They are affected by it as environmental conditions require increased spending on infrastructure to protect it from further degradation.
- In regards to the issue of soil erosion the regional and municipal government stakeholder group agree that “soil erosion contributes to the decline in environmental quality of the Caspian” with a mean of 7.5 and a standard deviation of 0.57
  - Interestingly they agree at just the 7.0 level that “sea level fluctuation has been responsible for most damage to the coastal infrastructure” with a standard deviation of 1.41.
  - Also of note is the mid level agreement with the statement “coastal cities and towns dump most municipal wastes into the waters of the Caspian.” The mean was 6.25 with the standard deviation at 2.63.
7. Potential Damage from Oil and Gas Development: This MPPI was a lower level concern for members of the regional and municipal government stakeholder group. Though the oil and gas industry stands to bring much needed revenues to these stakeholders, there are potential environmental ramifications as well. Among these are the negative impacts of a severe oil spill. If this were to occur, the regional and municipal government stakeholder group would be affected.

The regional and municipal government stakeholder group strongly supports the statement “the Caspian environment would be improved if all oil and gas activities used best available technologies.” The average is 8.5 and the standard deviation is 0.58. This suggests that as those affected by this MPPI there is support for stronger environmental practices than have been previously required. However, this may also be somewhat problematic if there is competition between states for contracts, and environmental regulations are seen as being uncompetitively restrictive.

8. Introduction of Exotic Species: The regional and municipal government stakeholder group does not see this MPPI as either a high level or low level concern. In the even of massive ecological shifts the regional and municipal government stakeholder group

members may be affected. However until that occurs they are more passive. They also do not contribute to this MPPI as a group.

### **State and Private Industries**

Stakeholder Group Summary: The state and private industries stakeholder group is vital to consider in this stakeholder analysis because they are believed to be significant contributors to environmental issues in the Caspian region. From industrial effluents to air pollution, and from water inundation to silting of waterways, this group is often targeted by other stakeholders as a primary contributor to environmental degradation in the Caspian region. The state and private industries stakeholder group is also affected by environmental degradation as well, due to the strains this puts on the labor force, the ability to attract new businesses into the region and their own health.

Participation: The Regional Stakeholder Analysis Survey was completed by 25 representatives of the state owned industries. Nationalities were represented accordingly: Azerbaijan – 17, I.R. Iran - 0, Kazakhstan - 4, Russia - 4, Turkmenistan – 1. The Regional Stakeholder Analysis Survey was completed by 14 representatives of the privately owned industries. Nationalities were represented accordingly: Azerbaijan - 7, I.R. Iran - 1, Kazakhstan - 3, Russia - 0, Turkmenistan – 3. Because there were states missing from each other these groups, and there is a concern with unequal distribution, these two groups were combined. In some cases, where it is relevant, they will be separated out, as needed.

MPPI Prioritization: The most important MPPIs for the state and private industries stakeholder group is the decline in human health, followed by the decline in certain fisheries and overall environmental decline. These were the top three for the entire stakeholder analysis, thus this group is matching the overall trends. The lowest concern MPPIs are introduction of exotic species, degradation of coastal landscape, and decline in infrastructure.

Root Cause Prioritization: Of the root causes presented, the highest ranked were lack of public awareness of environmental problems, non-sustainable use of resources, and lack of advanced technologies. The lowest ranked root causes were regional overpopulation, lack of property rights and sea level change. Again this fell within the overall averages for all stakeholder groups. This is worth noting because this particular group is often viewed as being unconcerned with environmental degradation, yet they are ranking both the MPPIs and the root causes in the same sequences as all other stakeholder groups combined.

#### Areas of High Concern:

1. **Decline in Certain Fishing Stocks:** This MPPI is a high level concern for the state and private industries stakeholder group. The decline in certain fishing stocks affects the state and private industries stakeholder group indirectly by increasing the scarcity of the certain species, and by increasing the abuse of power in the region. However, they are not directly affected by this MPPI. Alternately, they are viewed as contributors to the problem because of the decline in fishing stocks being tied to the pollution levels in the Caspian. This is not to say they bear full responsibility here, but rather, they contribute to it.

In response to the statement “Pollution is the primary reason there are fewer fish in the Caspian” the average of the state and private industries stakeholder group was 7.36 with a 2.19 standard deviation. This is widely spread across both state and private industries stakeholders, and mostly across the region. However, it may be important to not that the Russian industries were not in agreement with this and accounted for the relatively large standard deviation. This may in part be due to the

awareness of the illegal fish trade in this region. Alternately it may be due to a lack of clear accountability by this group as well and warrants further monitoring.

2. Degradation of Coastal Landscape: With regards to this MPPI the state and private industries stakeholder group is both affected, and a contributor, though not as directly as some other stakeholder groups. The citing of some industries within coastal plains has environmental ramifications especially as sea levels shift.

In response to the statement “There should be limits on some activities in certain zones of the coastal region” the state and private industries stakeholder group average was 6.86, with a standard deviation of 1.48. There was a relatively even distribution among states in the region. Additionally, the average response to the statement “it would be helpful to have coordinated coastal management plans in the Caspian region to help preserve the environment” was 7.60 with a standard deviation of 1.75. Again distribution across states was relatively even. The may portend that these industries are willing to consider support of such a plan with the recognition that economic activities in the region should be managed with environmental concerns in mind.

3. Threats to Biodiversity: This MPPI ranked as a midlevel concern for the state and private industries stakeholder group. They are not affected by this in any direct way, and they are contributors to this perceived problem in the sense that increased waste loads from industry have had negative impacts on the environment, hence impacting the biodiversity in the region.

- In response to the statement “agriculture and industrial wastes flowing into the Caspian threaten marine and coastal species” the level of support was a very string 8.14 with a standard deviation of 0.94. Additionally, in response to the statement “The environment of the Caspian is not suffering” the average response was an adamant 1.86 with a standard deviation of 0.88. This suggests both an awareness of environmental degradation in the Caspian region, as well as an awareness that the effluents are related to this problem. Again, this was widespread across the states in the region.

4. Decline in Overall Environmental Quality: The state and private industries stakeholder group rank this MPPI as a high level concern. The decline in Overall environmental quality both affects this stakeholder group and is contributed to by them. As noted earlier this group recognizes that environmental degradation is problematic in the region. Interestingly in regards to the responsibility for this the state and private industries stakeholder group also see some responsibility regarding these issues.

In response to the statement “Private industry should tall all responsibility for reducing environmental degradation in the Caspian” there was an unexpectedly high level of agreement. The average was 6.54 with a standard deviation of 1.77. Surprisingly this was equally supported among state and private industries.

Similarly, there was strong support for the statement “There should be more environmental monitoring projects that involve NGOs, scientists and private sector collaboration.” The average was 7.54 and the standard deviation was 1.46. This suggests that these groups are open to involvement and monitoring. However, it is also possible that with each of these responses we may be getting responses from industries charged with environmental renumeration. Thus the high level of support for both of these statements would be explained. Unfortunately, it is not clear if

this is the case, or is we are dealing with industries with strong environmental biases, which would be reflected in those willing to take such a survey in the first place. Though this is unclear, this should be explored further in subsequent studies.

5. Decline in Human Health: This MPPI also ranked as a very high level concern for the state and private industries stakeholder group. This issue affects this stakeholder group because if employees are not healthy they are less able to work. Additionally, they are not able to attract other businesses to the region when public health concerns are strong. The state and private industries stakeholder group is also a contributor to this problem by polluting in the region and failing to comply with current environmental legislation.

- Interestingly, there is a strong level of support for the statement “industrial runoff has caused people to be sick”. The average is 7.46 and the standard deviation is 1.65. This is widely spread among the represented states in the region. The Iranian respondent did not answer this, and therefore it is not possible to conclude that this is an issue that is widely agreed upon throughout the entire region.

6. Damage to Coastal Infrastructure and Amenities: This MPPI ranked as a very low level concern for members of the state and private industries stakeholder group. Though they are directly affected by this, in that the lack of infrastructure, and damage to this reduces their ability to function at optimal levels, there is little attention to this issue by this group. Additionally, the damage to the infrastructure and amenities that is environmentally based may not be perceived as threatening industrial output.

- In response to the statement “Mining activities reduce the water quality of the Caspian” the average agreement was at 7.08 with a standard deviation of 1.89. This suggests that this group is aware of this problem, and potentially contributing to it, though support for any measures to reduce this may be difficult to gauge.

7. Potential Damage from Oil and Gas Development: The state and private industries stakeholder group ranked this MPPI as a mid level concern. They are neither directly affected by, nor contributing to this particular issue.

8. Introduction of Exotic Species: The state and private industries stakeholder group ranked this MPPI as a very low level concern. They are neither directly affected by, nor contributing to this particular issue.

### **Coastal Zone Residents**

Stakeholder Group Summary: The coastal zone resident stakeholder group is the largest, most directly affected of all stakeholder groups discussed here. This stakeholder group

consists of those individuals who live within the extended economic zone of the Caspian. The coastal zone resident stakeholder group consists of survey participants including: municipal government, NGOs, educators, public healthcare providers, students, farming and fishing industry, and those who self-identified as “other” when not fitting into other classifications. Though this indicates that there are those who are both represented here as well as individual stakeholder groups, it is important to incorporate them into this category as well.

Participation: The Regional Stakeholder Analysis Survey was completed by 110 representatives of the coastal zone resident stakeholder group. Nationalities were represented accordingly: Azerbaijan - 16, I.R. Iran - 33, Kazakhstan - 12, Russia - 18, Turkmenistan – 31.

The breakdown of the representatives of the coastal zone resident stakeholder group is best presented in tabular form below

	Azerbaijan	Russia	Turkmenistan	Kazakhstan	I.R. Iran
Municipal Governments	2	1	2	0	1
NGOs	3	4	8	6	15
Educators	2	3	5	1	1
Public Health Care Providers	3	2	1	2	0
Students	2	2	5	1	1
Fishermen large industry	0	2	0	0	0
Fishermen small industry	1	2	0	2	0
Other	3	2	10	0	15
Total CZR	16	18	31	12	33

The members of the coastal zone resident stakeholder group are critical to include in this project because they are so integrally related to the Caspian ecosystem. They are those most affected by the environment, and those who also profoundly affect the environment in a variety of ways.

MPPI Prioritization: The most important MPPI for the coastal zone resident stakeholder group is the decline in overall environmental quality. The second highest is decline in certain fisheries. The lowest level concerns for this group is the decline in infrastructure and amenities and the introduction of exotic species.

Root Cause Prioritization: The highest root cause was lack of sufficient enforcement of current environmental laws. Low priority root causes include regional overpopulation, lack of property rights, and sea level change.

Areas of High Concern:

**Decline in Certain Fishing Stocks:** The decline in certain fishing stocks is a concern for the coastal zone resident stakeholder group because they are both affected by this directly and contributors to this. They are affected because the decline in fishing stocks limits the amount that are available to them for consumption in the future. Additionally, the abuse of power associated with the trade in over harvested species and byproducts has negative impacts on the society as a whole putting coastal residents in the position of either contributing to the problem or being jeopardized because they resist compliance.

- Most coastal zone resident stakeholder group eat less fish than their grandparents did and they consume fish from the Caspian less than three times per week according to survey results. (Average 6.27 with a

standard deviation of 2.7 in agreement with the statement “My grandparents ate more food from the Caspian waters than I do.” Average disagreement at 2.51 with a standard deviation of 2.21 in response to “I eat fish from the Caspian at least three times per week.”

- The members of the coastal zone resident stakeholder group are not in clear agreement regarding the health and safety of eating this fish however. In response to the statement “I think it is safe and healthy to eat fish from the Caspian” the average was 5.23 with a standard deviation 2.21. This suggests that though coastal zone resident stakeholder group may not trust the benefits of eating these fish they consume it because it is available, even if it may have negative health ramifications.
- The issue of declining fisheries that brought the highest level of concern from the coastal zone resident stakeholder group is the poaching and illegal market for certain fish. In response to the statement “Even if it is illegal, some fish will still be caught for profit” the average agreement level was 7.69 with a standard deviation of 1.56. The statement “People, other than fishermen, make money from the illegal fishing of some species” elicited an agreement level of 7.77 with a standard deviation of 1.61. This suggests that the coastal zone resident stakeholder group is very aware of this issue and they recognize that the market for certain species, even if illegal, may thrive. Further, it suggests that recognition of the abuse of power related to this is also widespread.
- The coastal zone resident stakeholder group has a medium level of agreement with the statement that “Pollution is the primary reason that there are fewer fish in the Caspian.” The average was 6.68 with a standard deviation of 2.26. Alternately, the statement “radiation is the primary reason that there are fewer fish in the Caspian” elicited a noncommittal response of 5.20 with a standard deviation of 2.34. This suggests that while pollution may be seen as a contributing factor to the decline in fish, among this stakeholder group, and radiation as non-determinant, the poaching problem is recognized as more directly linked to the decline in certain fisheries.
- In response to the statement “An enforced system of mutually agreed upon fishing limits would be effective for reducing over-fishing in the Caspian” the coastal zone resident stakeholder group average response was 7.07 with a standard deviation of 2.08. This suggested that though this stakeholder group may not clearly understand the mechanisms for implementing such a program they would support it in principle. Additionally, because a self regulating program for fisheries management would depend on broad community support, it is possible that this preliminary support could be the basis for further exploration of such a system.

**Degradation of Coastal Landscape:** The degradation of coastal landscape is a low level MPPi for the coastal zone resident stakeholder group. Though this issue affects them, as the problems associated with this MPPi result in a decline in their overall quality of life, they do not recognize this as a high level concern. Additionally, they contribute to the degradation of coastal landscape issue by using coastal resources in an unsustainable manner, and failing to comply with current environmental laws.

In response to the statement that “Farmers using herbicides and pesticides should be taught natural ways to reduce use of these chemicals (for instance: organic farming methods, crop rotation, more appropriate crop selection based on climate and soil, genetically engineered crops, training, education, other chemicals or synthetics)” the average 8.68 with a standard deviation of 1.88. Because many of the coastal zone resident

stakeholder group are farmers, even on a small scale, this may be a very important opening for CEP action. Education for coastal zone residents regarding more environmentally sensitive farming practices could have a wide impact on the Caspian environment while increasing the visibility among this pivotal stakeholder group.

Interestingly, there was also a high level of support among members of the coastal zone resident stakeholder group regarding coastal management plans to reduce coastal zone degradation. In response to the statement “it would be helpful to have coordinated coastal management plans in the Caspian to help preserve the environment” the average response was 7.51 with a standard deviation of 1.82. This suggests again that this stakeholder group has an interest in such a program and may be a key support group to consider consulting in designing such a program.

In response to the statement “Current laws are not strong enough to protect natural resources around the Caspian” the average agreement level was 7.94 with a standard deviation of 1.66 among coastal zone resident stakeholder group. This relatively high level of agreement suggests that the coastal zone resident stakeholder group may support stronger environmental legislation. Though the current laws are actually quite strong in principle, in practice they are not. Coordination of such policies may be quite difficult, however, that the members of this stakeholder group recognize the need for a coordinated coastal zone management plan, and realize that current laws, as enforced, are not sufficient to protect the Caspian environment.

**Threats to Biodiversity:** This MPPI is a mid level concern for the coastal zone resident stakeholder group. They are both affected by this threat and contributors to it. They are affected by a decline in biodiversity because a loss of biodiversity threatens to destabilize the ecosystems that many of them depend upon. If significantly impacted, biodiversity shifts could result in explosive populations of low value species of both flora and fauna, crowding out less virulent higher value species. Alternately, they are contributors to this MPPI by reducing population of beneficial species of flora and fauna, over harvesting some species, farming and grazing in regions with delicately balanced ecosystems, and polluting water and soils required for some species to thrive.

- The issue of concern for the coastal zone resident stakeholder group include the need to coordinate biodiversity reserves throughout the region. In response to the statement “There should be a network of marine and wetland nature preserves all around the Caspian” the average level of agreement was 7.79 with a standard deviation of 1.64. This compliments the previously discussed findings supporting a coordinated coastal management plan in the region.
- In response to the statement “agricultural and industrial wastes flowing into the Caspian threaten marine and coastal species” the coastal zone resident stakeholder group average response was 8.04 with a standard deviation of 1.25. As discussed in the previous section, this suggests an awareness of the need for more environmentally sensitive farming practices by these groups.
- In response to the statement “It is necessary to protect fish spawning sites in the Caspian” the average response was 8.18 with a standard deviation of 1.47. Again, though coastal residents are active in these spawning sites, they are also agreeing that these must be protecting in order to maintain certain fish populations in the region.

- In response to the statement “The environment of the Caspian is not suffering” the disagreement level was a very high 1.90 with a standard deviation of 1.55. Again this emphasizes the awareness of this group that there are environmental problems in the region.

Decline in Overall Environmental Quality: This MPPI is one of the highest ranking concerns for the coastal zone resident stakeholder group. The decline in overall environmental quality is a significant issue for these individuals as community members, as economic actors and as a coastal species affected by the degraded environment. This population is most directly affected by the decline in overall environmental quality of all stakeholder groups. Yet this is also a group that actively contributes to this decline as well. By encroaching on sensitive areas, altering the region for economic and sustenance based reasons, using the Caspian as a waste pool, and by over consuming a number of other species in the region, the coastal zone resident stakeholder group directly contributes to the environmental degradation of this area. This is not to suggest that this is malicious, intentional or even conscience, however, it remains a critical dilemma for this particular stakeholder group.

- In regards to the issue of over all environmental decline the coastal zone resident stakeholder group strongly supports enhanced environmental monitoring of environmental factors in the region. Specifically, in response to the statement “There should be more environmental monitoring projects that involve NGOs, scientists and private sector collaboration” the average response was a hearty 8.09 with a standard deviation of 1.28. This indicates that this group would be supportive of a collaborative effort between the public NGO and private actors.
- Interestingly, in response to the statement “Private industry should take all responsibility for reversing environmental degradation of the Caspian” the average was a nondescript 5.59 with a standard deviation of 2.51. This is peculiar because the industries themselves had a much higher level of agreement in regards to this. This suggests that though it might have been expected that the coastal zone resident stakeholder group would want to implement a precautionary principal – like program, this is not likely to be actively pursued by this stakeholder group.
- Like the industry stakeholder group, the coastal zone resident stakeholder group is of the opinion that “Better technology for environmental preservation would enhance the Caspian region.” The average here is 7.47 with a standard deviation of 1.84. Thus though there is the recognition that the environment is suffering, there is also the belief that technological remedies may be the solution to the problem. It is possible that this would be the case in part, though it is important to introduce low technological solutions because they are less likely to fail than more complex solutions.

Decline in Human Health: This ranks as a high level concern for this stakeholder group. The decline in human health directly affects the coastal zone resident stakeholder group. Additionally as they abuse the environment of the Caspian they also contribute to this problem. Interestingly though most of the statements in this section did not elicit especially high levels of agreement or disagreement.

- The issue of access to potable water did not evoke a high level of agreement or disagreement among the coastal zone resident stakeholder group. Specifically, in response to the statement “In the Caspian region, the biggest threat to the human population is the lack of safe drinking water” the average response was 6.85 with a standard deviation of 2.52. The agreement was spread across all states in the region. There were a number who disagreed, as reflected in the standard deviation. All states were represented among those disagreeing, except Azerbaijan. This suggests then that the residents of Azerbaijan are more profoundly affected by this issue than those of other states. Though this is widely believed among those studying the region, these results are not conclusive.
- The issue of responsibility for human health decline and healthcare management is addressed in the statement “Public health must be the concern of the government”. The average agreement with this was 8.49, with a standard deviation of 1.00.
- In response to the statement “People would be healthier if the environment were cleaner” the average agreement was 8.34 with a standard deviation of 1.38. This very high level of agreement suggests that the coastal zone resident stakeholder group should be considered carefully when integrated environmental policies are developed for the region. This is an opportunity for people of this region to benefit from CEP activity, while enhancing the reputation of CEP in the region.

Damage to Coastal Infrastructure and Amenities: This MPPI was one of the lowest ranked concerns for the coastal zone resident stakeholder group. They contribute to this peripherally by being economic actors in the region, as well as by those utilizing the infrastructure. Also, their encroachment into environmentally sensitive wetlands for farming and grazing decreases these amenities, though this is more specific to the degradation of coastal landscape MPPI. The coastal zone resident stakeholder group is affected by the decline in coastal infrastructure and amenities because they must live with declining conditions. Further, the lack of economic growth is in part due to this damage, because industry and other service sector employment options generally are not eager to base in areas where the infrastructure and amenities are dilapidated.

- In response to the statement “Soil erosion contributes to the decline in environmental quality of the Caspian” the average response among members of the coastal zone resident stakeholder group was 7.24 with a standard deviation of 1.72.
- Responses to other statements regarding the damage to coastal infrastructure and amenities was not strong and tended to have a wider variation. This suggest that opinions regarding this issue are latent, and generally not of concern to this stakeholder group.

Potential Damage from Oil and Gas Development: This MPPI ranked as a low to mid level concern for the coastal zone resident stakeholder group. This lower than expected ranking suggests that the media attention given to oil and gas pollution in the Caspian is out of synch with the actual popular concerns in the region. Alternately, the coastal zone resident stakeholder group may also recognize that this potential damage is not likely to be worse than current and historical damage and therefore increased energy industry activities comes with acceptable risks. This is especially due to the common

beliefs that incoming revenues from oil and gas exploitation in the region will have society wide benefits. The Caspian coastal zone resident stakeholder group is likely to be affected by potential damage from oil and gas development if a significant spill were to occur. Alternately, they are not contributors to this issue, because they really have little influence over environmental management plans, or enforcement of PSAs.

- In response to the statement “The preservation of the Caspian ecosystem cannot take place at the same time as oil drilling activities” the coastal zone resident stakeholder group average was 5.53 with a standard deviation of 2.61. Additionally in response to the statement “Multinational corporations and the energy industry do not care about the environment” the average was 5.91 with a standard deviation of 2.10. This strongly suggests that despite concerns that there may be animosity from members of this group towards the energy industry, it does not appear to be overwhelming. Further, the distribution of those in strong agreement with these statements is evenly spread across states in the region, and among stakeholder sub-groups. Nonetheless, this may be a very fluid opinion if a significant environmental event were to occur and be perceived as handled poorly by the energy industry. Therefore this public opinion bears monitoring in the future.
- In response to the statement “the Caspian environment would be improved if all oil and gas activities used best available technologies” the average level of agreement was 7.43 with a standard deviation of 1.99. This suggests that these stakeholders are aware that newer technologies for extraction of oil and gas are needed in the region in order to reduce environmental damages. Again, there is an opportunity here for CEP and the energy industry to educate the population about steps that are being taken to improve the environment.

**Introduction of Exotic Species:** This issue ranked as one of the lowest level concerns for members of coastal zone resident stakeholder group. This is to be expected, because this is a relatively new concern in the region, and the members of this stakeholder group are more focused on meeting their immediate basic needs in many instances. Nonetheless, if this were to become as severe in the Caspian as it was in the Black Sea, there may be very significant impacts for this population, especially if fishing stocks are depleted. The coastal zone resident stakeholder group is affected by this issue, however they are not contributors to it.

- In response to the statement “I have seen unusual creatures in the Caspian that were not there ten years ago” level of agreement was 5.64 with a standard deviation of 2.30. Those stakeholders agreeing to this are from all Caspian states, and from most every stakeholder sub-group.
- In response to the statement “Invasive species are creating significant environmental degradation in the Caspian” the average agreement level was at 6.64 with a standard deviation of 1.90. Again there is wide variation among members of the coastal zone resident stakeholder groups and states in the region who agree with this statement. Though this issue is of low level concern compared to other MPPIs this should be monitored in the future and more in depth surveys of these groups should be conducted as these exotic species proliferate in the region.

## **Fishermen**

**Stakeholder Group Summary:** The fishermen stakeholder group is one of the most visible in the region by virtue of being dependent upon reasonable environmental conditions to ply their trade. In the Caspian region, where there is a great deal of attention to the trade in certain

species of fish and fish by-products the fishermen's plight becomes quite prevalent. However, it is important to recognize that members of this stakeholder group are also members of the coastal zone resident stakeholder group. Thus, they are dually affected by issues of environmental degradation, as well as contributors to some of the MPPIs. This section will focus only on their role as stakeholders specifically related to their occupation as fishermen. The impacts that they face as coastal zone residents are addressed in that specific section.

Participation: The Regional Stakeholder Analysis Survey was completed by 2 representatives of Farming/fishing large industry stakeholder group. Nationalities were represented accordingly: Azerbaijan - 0, I.R. Iran - 0, Kazakhstan - 0, Russia - 2, Turkmenistan – 0. The Regional Stakeholder Analysis Survey was completed by 5 representatives of farming/fishing artisanal industry. Nationalities were represented accordingly: Azerbaijan - 1, I.R. Iran - 0, Kazakhstan - 2, Russia - 2, Turkmenistan – 0. Because of the relatively small sample size, these two groups were combined. They will be separated as discrepancies between these groups warrant. Additionally, the lack of representation from Iran may in part be due to translation problems in the survey, and would be captured in the grouping of “other”, which was incorporated into the coastal zone resident stakeholder group. Additionally, respondents who in large self identified as representing the fishing industry rather than farming in this survey. Therefore, this group is referred to as the “fishermen stakeholder group”.

MPPI Prioritization: Not surprisingly the members of the fishermen stakeholder group unanimously identified the decline in certain fisheries as the highest priority MPPI. (This is the only case in which all stakeholders were unanimous about a MPPI). They also prioritized decline in overall environmental quality as a high level concern. Lowest level concerns were the degradation of coastal landscape and decline in infrastructure and amenities. The introduction of exotic species ranked sixth of the eight. Potential pollution from oil and gas activities ranked as the third highest concern.

Root Cause Prioritization: Interestingly the highest root cause concern for this group was the undefined legal status. There was near perfect agreement on this issue. This may be due to a translation error, because it is not clear why fishermen would be concerned so highly about the lack of legal status of the sea. On the other hand, this may be understood as the legal status of fishing of certain species in the sea, especially because at the time the survey was administered to this group the implementation of the CITES ban on sturgeon was being discussed quite visibly by these governments. Other high priority root causes for the fishermen stakeholder group were lack of sufficient enforcement of current environmental laws, regional poverty and weakness in civil society. The lowest priority root causes were regional over population and lack of property rights. Abuse of power issues, which in many cases directly affect this industry was a midlevel concern.

#### Areas of High Concern:

1. Decline in Certain Fishing Stocks: Not surprisingly, this MPPI is the highest ranking concern for members of the fishermen stakeholder group. The fishermen stakeholder group is affected by this issue because decline in commercially available fishing stocks reduces the ability of this stakeholder group to profit. Additionally, the decline in certain fisheries makes competition for existing stocks more fierce and eventually, increases the velocity with which these species decline. Loss of these species has long range impacts as well as other, less commercially valuable stocks increase and compete for resources previously consumed by high value stocks. The unmanaged taking of immature stocks of some species also hinders their ability to reproduce, hence significantly decreasing the stock populations. Though this stakeholder group is affected by this dynamic cycle, they also contribute to this. Therefore they are both key to the problem and the solution of the decline in certain fisheries.

In regards to the actual decline in certain fisheries the fishermen stakeholder group respond that they have noticed a decrease in the amount of fish they eat in compared to their ancestors. In response to the statement “my

grandparents ate more food from the Caspian waters than I do” the average level of agreement was 8.20, with a standard deviation of 1.30. This very high number suggests that of those participants from the fishermen stakeholder group, diets are less dependent on fish from the Caspian. This may be for one of two reasons, either there is less fish available, or more alternative foods available. Either way, this bears further exploration in the future.

In response to the statement “Pollution is the primary reason there are fewer fish in the Caspian” the average level of agreement was 8.60 with a standard deviation of 0.58. The sources of the pollution will be explored subsequently. This is especially interesting to note this response since many observers believe that over fishing is the primary reason that there are fewer fish in the Caspian.

In regards to the concern of illegal fishing in the Caspian, the fishermen stakeholder group responded accordingly. In response to the statement “Even if it illegal, some fish will still be caught for profit” the average level of agreement was 7.6 with a standard deviation of 2.19. In response to the statement “People, other than fishermen, make money from the illegal fishing of some species” the average level of agreement was 8.60 with a standard deviation of 0.89. This suggests the very real awareness of this problem, and that it is endemic in the region.

On the other hand, in response to the statement “An enforced system of mutually agreed upon fishing limits would be effective for reducing over-fishing in the Caspian” the average level of agreement was 7.60 with a standard deviation of 1.14. This hearty level of agreement may portend a willingness on the part of the fishermen stakeholder group to actively support such a program, if instituted with their immediate needs in mind. This is an area that may be ripe for CEP involvement, pending further investigation into a broader population of fishermen in the region.

2. Degradation of Coastal Landscape: This MPPI is one of the lowest ranking concerns of the fishermen stakeholder group. They are affected by this MPPI in terms of the impacts this degradation has on the fish populations. The fishermen stakeholder group do not directly contribute to the degradation of coastal landscape in a capacity beyond that as members of the coastal zone resident stakeholder group.

In response to the statement “Farmers using herbicides and pesticides should be taught natural ways to reduce use of these chemicals (for instance: organic farming methods, crop rotation, more appropriate crop selection based on climate and soil, genetically engineered crops, training, education, other chemicals or synthetics)” the average 7.50 with a standard deviation of 1.29.

In response to the statement “It would be helpful to have coordinated coastal management plans in the Caspian region to help preserve the environment” the fishermen stakeholder group strongly agreed with an average of 8.75 and with a standard deviation of 0.50. Both of these high levels of agreement on these issues suggests that this stakeholder group is interested in supporting more active environmental management in the region related to this MPPI.

3. Threats to Biodiversity: The fishermen stakeholder group ranked this as a mid level concern among the MPPIs. They are potentially affected by this issue because the decline in biodiversity could significantly unbalance the functioning of the current ecosystem and thus reduce the availability of both fish for catch, but also the resources that these fish are dependent upon. The fishermen stakeholder group contribute to this problem by overfishing some species. Though it is not believed that the sturgeon is a keystone species within the Caspian ecosystem, the decimation of these fishing stocks may have other significant repercussion on the ecosystem its biodiversity.

In response to the statement "Agricultural and industrial wastes flowing into the Caspian threaten marine and coastal species" The average response was 8.60 with a standard deviation of 0.89. The concern about pollution mention in the previous section is reflected here as well, suggesting that these effluents are causing depletion of certain fishing stocks.

In response to the statement "It is necessary to protect fish spawning sites in the Caspian" the average response was 8.80 with a standard deviation of 0.45. In response to the statement "there should be a network of marine and wetland nature preserves all around the Caspian" the average level of agreement was 7.80 with a standard deviation of 1.64. Both of these responses further suggest the support of a more active environmental management plan in the region by this stakeholder group.

4. Decline in Overall Environmental Quality: The decline in overall environmental quality is a high level concern for the fishermen stakeholder group. They are affected by this issue as members of the coastal zone resident stakeholder group. They are also contributors to this issues as members of the coastal zone resident stakeholder group. Independently, as fishermen they are less pivotal to this issue.
5. Decline in Human Health: This MPPI ranked as a mid to high level concern for the members of the fishermen stakeholder group. They are affected and contributors to this issue as members of the coastal zone resident stakeholder group.
6. Damage to Coastal Infrastructure and Amenities: This MPPI ranked as a mid to high level concern for the members of the fishermen stakeholder group. They are affected and contributors to this issue as members of the coastal zone resident stakeholder group.
7. Potential Damage from Oil and Gas Development: This MPPI ranked as the third highest concern for members of the fishermen stakeholder group. This stakeholder group would be affected by this issue in the event of a major oil spill, or if energy industry activities severely disrupted the habitats of the fish. The fishermen stakeholder group do not directly contribute to this problem outside of their capacity as members of coastal zone resident stakeholder group.
  - In response to the statement "the preservation of the Caspian ecosystem cannot take place at the same time as oil drilling activities" the average level of agreement was 8.60 with a standard deviation of 0.55. In response to the statement "there are fewer fish in the Caspian than there

used to because of recent oil drilling” the average agreement level was 7.29 with a standard deviation of 1.25. These two statements indicate that there is already a strong suspicion among fishermen that they will be displaced by energy activities in the region. Though this has not been substantiated by current research, this potentially growing animosity between the fishermen stakeholder group and the energy industry warrants monitoring by and possible intervention from CEP.

8. Introduction of Exotic Species: This MPPI ranked as one of the lowest concerns for the fishermen stakeholder group. They are affected by the introduction of exotic species because if these species proliferate as they have in the Black Sea region, the fishing stocks may be significantly impacted. The fishermen stakeholder group do not directly contribute to this emerging MPPI.
  - Interestingly, in response to the statement “I have seen unusual creatures in the Caspian that were not there ten years ago” the average level of agreement 8.25 with a standard deviation of 1.50. In response to the statement “Invasive species are creating significant environmental degradation in the Caspian” the average level of agreement was 7.2 with a standard deviation of 2.49. This strongly suggests that of those survey participants they have become aware of the increase in observable exotic species in the region. Though the numbers of participants are not high enough to legitimate conclusions that these species are prevalent, this anecdotal evidence suggests that these species are being observed by those stakeholders who are most directly in contact with the Caspian waters.

## **Non Governmental Organizations**

Stakeholder Group Summary: The NGO stakeholder group is an important component in the stakeholder analysis. These stakeholders have been underrepresented in past environmental programmes in the past. Therefore it is critical to include them in this analysis. The difficulty with NGOs in this region is the representative quality of them. There is currently a debate about whether environmental NGOs are more focused on environmental concerns or from benefiting from the benevolence of international organizations eager to be seen as supporting these groups. Despite this, the NGOs participating in this study represented all states in the region and warrant inclusion here. However, it is also worth noting that with regard to this region the NGOs are generally less influential and active than they are in other areas. Therefore their input into particular issues will be discussed as the NGO stakeholder group directly impact these issues, outside of their inclusion as members of the coastal zone resident stakeholder group.

Participation: The Regional Stakeholder Analysis Survey was completed by 36 representatives of the NGO stakeholder group. Nationalities were represented accordingly: Azerbaijan - 3, I.R. Iran - 15, Kazakhstan - 6, Russia - 4, Turkmenistan – 8. This emphasis on the NGOs from Iran will be addressed as needed in the study. The average size of the NGOs represented is ten to fifty people, and the average age of the organizations is five to ten years. This corresponds well to the collapse of the Soviet system.

MPPI Prioritization: The NGO stakeholder group ranks the decline in overall environmental quality and decline in certain fisheries as the highest prioritized concerns. Decline in biodiversity is the third highest concern by a very close margin. The lowest level concerns were the decline in infrastructure and introduction of exotic species. Despite some of the more

vocal NGO groups in the region, pollution from oil and gas activities ranked fourth of eight MPPI presented.

Root Cause Prioritization: The NGO stakeholder group ranked the non-sustainable use of resources and the lack of sufficient enforcement of current environmental laws as the highest priority root causes. The lowest priority root causes were sea level change, lack of property rights and regional overpopulation. Weakness in civil society was a mid level root cause with very high standard deviation.

Areas of High Concern:

1. **Decline in Certain Fishing Stocks:** This MPPI is a high level concern for members of the NGO stakeholder group. Their concern for the depletion of certain stocks is certainly important in terms of bringing this issue to broad public notice. Groups such as the World Wildlife Fund, the Cousteau Society and Greenpeace all take an active interest in this issue. However, they do not directly impact this issue. Locally, the NGO stakeholder group recognize the environmental impacts of over fishing as well as the economic incentives for this. However as NGOs they are not directly active in contributing to this issue, nor are they directly affected by it outside of their capacities as members of the coastal zone resident stakeholder group.
  
2. **Degradation of Coastal Landscape:** Members of the NGO stakeholder group ranked this as a low level concern. In their capacity as civic organizers they may be affected by this issue because the degradation of coastal landscape results in part because of misuse of coastal areas and mis-education about practices that degrade the landscapes.
  - In response to the statement “Farmers using herbicides and pesticides should be taught natural ways to reduce use of these chemicals (for instance: organic farming methods, crop rotation, more appropriate crop selection based on climate and soil, genetically engineered crops, training, education, other chemicals or synthetics)” the average 8.00 with a standard deviation of 1.33. This high level of agreement suggests that the NGOs may be a prime medium for educating farmers about these practices. If CEP were to develop such a plan, it is possible that these NGOs could help institute such a programme.
  - In response to the statement “It would be helpful to have coordinated coastal management plans in the Caspian region to help preserve the environment” the average level of agreement was 7.48 with a standard deviation of 1.90. This is important in regards to subsequent sections.
  
3. **Threats to Biodiversity:** The NGO stakeholder group ranked this as the third highest concern of the MPPIs presented. The NGOs who focus on environmental degradation often decry the loss of species in this region. This concern for the loss of species and habitats distinguished them from the coastal zone resident stakeholder group. The NGO stakeholder group are not a contributing factor to the decline in biodiversity outside of the concern that their activities hamper preservation efforts by placing unrealistic and unrealizable demands on the other stakeholders in the region.
  - In response to the statement “There should be a network of marine and wetland preserves all around the Caspian” the average level of agreement was a solid 8.53 with a standard deviation of 0.79. In combination with the statement in the previous section, there is clear

agreement among these groups that coordination of efforts to preserve the environment is imperative within the purview of this stakeholder group. Further, this recognition of the need for such action may in part be due to the commendable efforts of groups such as ISAR and others. It may be worthwhile for CEP to continue to coordinate efforts with these groups in order to rally public opinion and to educate citizens about these issues.

- In response to the statement “agricultural and industrial wastes flowing into the Caspian threaten marine and coastal species” the average level of agreement was 8.07 with a standard deviation of 1.52. This suggests that the NGO stakeholder group is aware of the problems of effluents in the region, and may be able to act as advocates and educators for more environmentally sound practices in the region, if they are able to continue coordinated activities and obtain support from funding sources for these projects. Again, CEP could continue to support these activities with small grants programmes.

4. Decline in Overall Environmental Quality: This MPPI ranked as a very high level concern for the NGO stakeholder group. They are affected by this issue as members of the coastal zone resident stakeholder group. Additionally, they are affected because the lack of civil society is at times blamed for the decline in overall environmental quality. They are not significant contributors to this MPPI.

- In response to the statement “ There should be more environmental monitoring projects that involve NGOs, scientists and private sector collaboration” the average level of agreement is 8.25 with a standard deviation of 1.17. This high level of agreement is as expected. Nonetheless, it also suggests that instead of the development of a confrontational relationship between these groups, there may be a strong potential for collaboration and coordination between these groups. Though there may be some who are suspicious of this, it is possible that with proper management and independent monitoring these relationship may set new standards only now starting in industrialized societies.

5. Decline in Human Health: This MPPI ranked as a high level concern for the NGO stakeholder group. They are affected by this as members of the coastal zone resident stakeholder group. Additionally as advocates of environmental stewardship they are able to focus on environmental causes of human health decline in order to support their causes. Though these relationships may be somewhat spurious, they are important as tools for mobilizing public action.

In response to the statement “People would be healthier if the environment were cleaner” the NGO stakeholder group average level of agreement was a very high 8.74 with a standard deviation of 0.59. This supports the belief that illness in the region are due to environmental conditions rather than other conditions such as economic decline or unavailability of health care.

6. Damage to Coastal Infrastructure and Amenities: This MPPI was ranked the sixth of eight presented by the NGO stakeholder group. They are affected by this and contributors to it as members of the coastal zone resident stakeholder group.

Because they do not prioritize this issue, it can be assumed that it is not an issue the NGO stakeholder group is eager to advocate.

7. Potential Damage from Oil and Gas Development: Despite some very vocal NGOs, those who participated in this survey did not vilify the energy industry. Rather the potential damage from oil and gas activities ranked as the fourth highest concern for the group. The NGO stakeholder group is affected by this as members of the coastal zone resident stakeholder group.
  - Interestingly, in response to the statement “the preservation of the Caspian eco-system cannot take place at the same time as oil drilling activities” was a tepid 5.05 with a standard deviation of 2.73. Similarly, the statement “Multinational corporations and the energy industry do not care about the environment” garnered a 6.30 average with a standard deviation of 1.78. Though the second statement is somewhat higher in agreement than the first, it is important to note that in both cases there are fairly high standard deviations. These suggest that there is little cohesion among members of the NGO stakeholder group. This disputes the belief that these groups are in high levels of agreement in opposition to energy industry activities.
8. Introduction of Exotic Species: The NGO stakeholder group ranked this as the lowest level concern. This is probably due to the lack of public knowledge about this issue. The NGOs are affected by this issue, as it affects biodiversity, and over all environmental decline. Though there are no high level concerns by the NGO stakeholder group about this activity, if they were to be educated, the NGO stakeholder group may become a proactive group to assist in educating and rallying citizens in the region about the potential hazards of these invasive species. CEP may consider educating these groups.

### **Public Health Care Providers**

Stakeholder Group Summary: The public healthcare providers stakeholder group are an important component in understanding the trends among the least represented stakeholder groups in the region. The public healthcare provider stakeholder group works with populations who are affected by environmental decline as well as challenging economic conditions. They see first hand the problems faced by the most disenfranchised populations in the region. Though this study does not extensively focus on the work of these individuals, it may be advantageous to the CEP to develop a coalition of public healthcare providers to monitor the health conditions of the population around the Caspian region. Tracking trends in human illnesses may provide CEP with an accurate portrait of the environmental impacts on the human population. Additionally, by participating in epidemiological studies in the region, the CEP may access groups that are otherwise unrepresented throughout the region. This may be pursued in collaboration with other organizations such as the World Health Organization.

Participation: The Regional Stakeholder Analysis Survey was completed by 8 representatives of the public healthcare provider stakeholder group. Nationalities were represented accordingly: Azerbaijan - 3, I.R. Iran - 0, Kazakhstan - 2, Russia - 2, Turkmenistan – 1.

**MPPI Prioritization:** Overwhelmingly, the public healthcare provider stakeholder group ranked the decline in overall environmental quality as the most important MPPI. This was very closely

followed by the expected decline in human health. Though these two were close the agreement on the top priority, decline in overall environmental quality was unanimous among this stakeholder group. This suggests that they recognize that environmental quality is closely linked to human health conditions. The lowest ranking issues for the public healthcare provider stakeholder group were the degradation of coastal landscape and decline in infrastructure and amenities.

Root Cause Prioritization: The root causes that received the highest prioritization by the public healthcare provider stakeholder group were lack of advanced technologies and weakness in civil society. The lowest ranked root causes were abuse of power, lack of property rights and regional over population.

Areas of High Concern:

1. Decline in Certain Fishing Stocks: The public healthcare provider stakeholder group is not directly affected by this issue, nor do they contribute to it, outside of their capacity as members of the coastal zone resident stakeholder group.
2. Degradation of Coastal Landscape: The public healthcare provider stakeholder group is not directly affected by this issue, nor do they contribute to it, outside of their capacity as members of the coastal zone resident stakeholder group.
3. Threats to Biodiversity: The public healthcare provider stakeholder group is not directly affected by this issue, nor do they contribute to it, outside of their capacity as members of the coastal zone resident stakeholder group.
4. Decline in Overall Environmental Quality: The public healthcare provider stakeholder group are not directly affected by this issue, nor do they contribute to it, outside of their capacity as members of the coastal zone resident stakeholder group. The exception to this is in regards to air quality issues. Though air pollution is not generally considered to be a significant problem in the region, it is a concern for some.
  - In response to the statement “Air quality is a significant problem in the Caspian region” the public healthcare provider stakeholder group average level of agreement was 7.43 with a standard deviation of 2.07. Though this standard deviation is somewhat higher than usual, it does tell us that the public healthcare provider stakeholder group members are seeing ramifications of poor air quality in their clientele. Therefore, though CEP is not directly charged with improving air quality in the region, this may be an area where secondary benefits of improving the overall environmental quality are seen.
5. Decline in Human Health: the public healthcare provider stakeholder group is immediately involved in this MPPI. As those who are most closely interacting with the coastal zone resident stakeholder group members and their physical health needs, the public healthcare provider stakeholder group are in a unique position to observe the impact environmental conditions have on their patients. Additionally, they are able to monitor changes over time. On the other hand, it is especially difficult to clearly establish a cause and effect relationship with most illnesses, and therefore it is

not always possible to pinpoint environmental causes for human diseases and disorders.

- In response to the statement “In the Caspian region, the biggest threat to the human population is the lack of safe drinking water” the average level of agreement was 8.14 with a standard deviation of 1.46. This was evenly spread through the represented states in the region, the one Russian and one Azeri respondents ranked this as a 6, while all the others ranked this as a 9, signifying very strong agreement.
  - In response to the statement “Industrial runoff has caused people to be sick” the average level of agreement was 6.29 with a standard deviation of 3.09. The very high standard deviation is due to two respondents (Azeri and Kazakh) disagreeing with this statement
  - In response to the statement “Radioactive materials have led to a decline in human health” the average level of agreement was 7.86 with a standard deviation of 1.95. There were two respondents with “no opinion” ranked 5 from Azeribaijan and Russia, while the rest ranked this as a 9 for strongly agreeing.
  - In response to the statement “People are healthier today than they were 20 years ago in the Caspian region” the average level of (dis) agreement was 3.00 with a standard deviation of 2.77. This suggests that the trend towards the decline in health has been observed by these stakeholders. Though this may be informative, the number of respondents is too low to treat this as anything other than anecdotal evidence. Nonetheless, this information may lead to further investigation into this issue, with a more directed survey of the public healthcare provider stakeholder group.
  - In response concerns of causality, two statements provide information about the public healthcare provider stakeholder group perceptions. In response to the statement “If there were a stronger economy, people would be healthier in the Caspian region..” the average level of agreement was 8.17 with a standard deviation of 1.33. In response to the statement “People would be healthier if the environment were cleaner” the average level of agreement was 8.69 with a standard deviation of 0.52. This suggest that the direct relationship between environmental conditions and human health is also related to economic conditions. The direction of causality here is difficult to determine, yet, the interrelated nature of these issues leads to the conclusion that public healthcare provider stakeholder group see that both economic and environmental conditions are added stressors on the population. Again, this anecdotal evidence may be a basis for more in-depth investigation into the environmental causes of human health decline.
6. Damage to Coastal Infrastructure and Amenities: The public healthcare provider stakeholder group is not directly affected by this issue, nor do they contribute to it, outside of their capacity as members of the coastal zone resident stakeholder group.
7. Potential Damage from Oil and Gas Development: The public healthcare provider stakeholder group is not directly affected by this issue, nor do they contribute to it, outside of their capacity as members of the coastal zone resident stakeholder group.

8. Introduction of Exotic Species: The public healthcare provider stakeholder group is not directly affected by this issue, nor do they contribute to it, outside of their capacity as members of the coastal zone resident stakeholder group.

## **Scientific Community**

Stakeholder Group Summary: The Scientific Community in the Caspian Region is significant to environmental issues for a number of reasons. Among these are the ability of these groups to provide data and analysis to policy makers in the region, to study changes in the environment of the region and to act as educator for the public. Additionally, these groups provide the Programme with insights regarding the environment over time that external observers may not be aware of. In general, the training of these individuals has been specific to disciplines such as biology, chemistry, geology and hydrology. There is very little formal training in the region for ecologists who examine factors in a broader systemic context. Nonetheless, these individuals continue to research issues in the area, and have a stake in access to the ecosystems of the Caspian. Ideally, they also provide unbiased information to those groups seeking their expertise, including other stakeholder groups. Thus their evaluations of the issues in the environment are critical to consider, both as stakeholders and as information providers.

Participation: The stakeholder analysis survey was completed by 22 self-identified members of the Scientific Community. Nationalities were represented accordingly: Azerbaijan – 4, I.R. Iran – 2, Kazakhstan – 7, Russia – 7, Turkmenistan – 2.

MPPI Prioritization: The members of this stakeholder group are relatively innocuous in terms of its direct effect on the environment and the MPPIs. However, it is affected by these MPPIs in terms of research subjects and materials. Of these the members of the Scientific Community rank Decline in Human Health as the most important MPPI, followed closely by Decline in Overall Environmental Quality, Potential Damage from Oil and Gas Activities, Decline in Certain Fisheries, and Decline in Biodiversity. Damage to Coastal Infrastructure and Amenities as the lowest.

Root Cause Prioritization: Root Causes of highest concern to the Scientific Community stakeholders are “lack of sufficient enforcement of current environmental laws”, and the “undefined legal status of the sea”. Lowest concern root causes are “regional overpopulation” and “lack of property rights”. The high level of concern regarding “lack of enforcement of current environmental laws” is probably a result of the belief that more rigid enforcement of these laws would lead to improvement in the environment and reduction in deleterious anthropogenic effects. The concern that the undefined legal status is a root cause of environmental problems in the Caspian may stem from the press coverage of this issue. There is equal distribution of these concerns across nationalities as well, signifying that this is not a state based phenomenon.

The MPPI sub-issues of highest concern for the Scientific Community stakeholder group include the effect of industrial and agricultural storage near, and runoff into eco-systems, the need to establish a network of marine and wetland preserves all around the Caspian, and the current stress on the environment of the Caspian ecology.

The only particularly notable potential conflict between stakeholder groups involves the extent of measures to reduce introduction of invasive species in the Caspian. The Scientific Community stakeholder group regards this as an important preventative measure and high priority issue, while the Multinational Corporation (MNC) stakeholder group regards this as a lower priority issue. The importation of these exotic species is partially a result of MNC activities. Though this is unlikely to create significant conflict in the near term, it may be

problematic if exotic species proliferate in the region causing severe environmental degradation.

A potential resolution to this conflict may be to support for the Scientific Community members in the study of endemic and invasive biota in the region. Further, if such a study were completed by a regionally based group, and presented to the MNCs with support from the Caspian Environment Programme, there is potential to both educate the MNCs and to pacify the scientific communities concern regarding these issues.

### **Multinational Corporations**

Stakeholder Group Summary: The multinational corporation stakeholder group consists of those individuals representing large, international companies working in the region. By and large there are energy industry representatives. As politically powerful groups, the multinational corporations wield significant influence on the environmental policies of the region. The PSA process specifies environmental impacts permitted by governments in the region. The tolerated levels of pollution from energy industry activities is negotiated by these groups, and though it is in their immediate interest to minimize responsibility for their pollution, there is the recognition among some of these representatives that doing so may have long term repercussions that are to be avoided. Additionally, these companies are introducing new technologies into the region which will minimize pollution, compared to older, less functional technologies. CEP is in a unique position with regards to these groups in that they are partially dependent on CEP for positive public relations regarding environmental issues. Alternately, CEP stands to benefit from alliances with these groups and access to technologies, data and potential funding. In a sense this potentially establishes a win-win situation for both CEP and the multinational corporation stakeholder group.

Participation: The Regional Stakeholder Analysis Survey was completed by 7 representatives of the multinational corporation stakeholder group. Nationalities were represented accordingly: Azerbaijan - 2, I.R. Iran - 0, Kazakhstan - 3, Russia - 0, Turkmenistan - 1, other - 1.

MPPI Prioritization: The multinational corporation stakeholder group ranked the decline in overall environmental quality, and decline in certain fisheries as the two most important MPPIs. This falls into line with a significant majority of other stakeholder groups. The second lowest priority MPPI was tied between decline in infrastructure and amenities and introduction of exotic species. The lowest concern MPPI for the multinational corporation stakeholder group was potential pollution from the oil and gas industry. It is worth noting that two other stakeholder groups, students and scientists ranked the potential pollution from oil and gas activities as a top MPPI.

Root Cause Prioritization: The multinational corporation stakeholder group ranked several root causes as very high priorities. These were lack of sufficient enforcement of current environmental laws, undefined legal status, lack of advanced technologies and abuse of power. The lower priority root causes were lack of property rights, regional overpopulation and sea level change. Again, there were discrepancies between the multinational corporation stakeholder group and others with regards to the abuse of power, which energy ministries, regional and municipal government stakeholder groups and public healthcare providers see as a low priority root cause. This may be because the multinational corporation stakeholder group are more removed than others from this issue.

#### **Areas of High Concern:**

1. **Decline in Certain Fishing Stocks:** The multinational corporation stakeholder group is not directly affected by this issue, nor do they contribute to it directly. Nonetheless,

the multinational corporation stakeholder group is often blamed for the decline in certain fisheries. This is worth considering in subsequent sections related to conflicts between groups, because the survey shows that they are more concerned about environmental issues that affect fisheries and biodiversity than common beliefs may suggest.

- For instance, in response to the statement “It is necessary to protect fish spawning sites in the Caspian” the average level of support was a very high 8.43 with a standard deviation of 0.95. Additionally, in response to the statement “There should be a network of marine and wetland nature preserves all around the Caspian” the average level of agreement was 7.71 with a standard deviation of 1.49. This is only a minute portion lower than that of the coastal zone resident stakeholder group. Obviously, these pertain to issues including biodiversity decline and overall environmental quality, and bear further monitoring as multinational corporation stakeholder groups become more active in the region.
  - In response to the statement “there are fewer fish in the Caspian than there used to be because of recent oil drilling” the average level of agreement was 6.00 with a standard deviation of 3.21. (Evidently, Kazakh based corporations see a correlation between decline in certain fisheries and oil industry activities.)
2. Degradation of Coastal Landscape: The multinational corporation stakeholder group is not directly affected by this issue, nor do they contribute to it directly.
  3. Threats to Biodiversity: The multinational corporation stakeholder group is not directly affected by this issue, nor do they contribute to it directly.
  4. Decline in Overall Environmental Quality: The multinational corporation stakeholder group rank this as a high level concern. As mentioned above, they support the creation of a network of marine and coastal nature reserves to protect the Caspian environment. Additionally, they are well aware that environmental problems have multiple causes, including agricultural and industrial runoff.
    - In response to the statement “agricultural and industrial wastes flowing into the Caspian threaten marine and coastal species” the average level of agreement was 8.43 with a standard deviation of 0.97. This suggests that the multinational corporation stakeholder group is more aware of press reports about the environment of the Caspian, or that it is looking to place blame away from its own activities. Either way, it is important that the respondents to this survey from the survey have a relatively high level of understanding of the environmental problems in the region, and some of their causes. Of course, assuming that those interested in completing the survey are from the Health, Safety and Environment divisions of multinational corporations, so some familiarity with environmental issues is to be expected.

5. Decline in Human Health: The multinational corporation stakeholder group is not directly affected by this issue, nor do they contribute to it directly.
  
6. Damage to Coastal Infrastructure and Amenities: The multinational corporation stakeholder group is not directly affected by this issue, nor do they contribute to it directly, beyond the scope of relying on the infrastructure for conducting business. However, this declining infrastructure is outside the scope of this project.
  
7. Potential Damage from Oil and Gas Development: This MPPI ranked as the lowest level concern for the members of the multinational corporation stakeholder group. Most likely this is due to confidence about their own work and the ability to minimize environmental damages. As noted earlier, several stakeholder groups ranked this MPPI as a high level concern. Therefore this may be a potential conflict in the event the environmental degradation from oil and gas activities becomes acute in the region.
  - In response to the statement “multinational corporations and the energy industry do not care about the environment” the average response was 4.71 with a standard deviation of 2.24. This suggests that the multinational corporation stakeholder group do not see themselves as unconcerned about the environment to the degree that some may suggest they are. Again this potential conflict will be addressed subsequently.
  - In response to the statement “The Caspian environment would be improved if all oil and gas activities used best available technologies” the average level of agreement was 7.86 with a standard deviation of 0.90.
  - In response to the statement “A petroleum industry based legal agreement for marine pollution from oil would reduce oil pollution in the Caspian” the average response was 6.71. These statements suggest that the multinational corporation stakeholder group recognizes the need to improve environmental issues, as well as the need to employ best available technologies and practices to reduce significant pollution from oil and gas activities. Areas where there is potential conflict will be addressed separately in subsequent sections.
  
8. Introduction of Exotic Species: The multinational corporation stakeholder group ranked this MPPI as a very low level concern. They are not directly affected by this issue, though they do contribute to it, as inter-sea transport and exchange of ballast water from outside the Caspian allows for the introduction of exotic species into the Caspian ecosystem. This introduction of species may be a significant problem for the Caspian waters in the future, and as a primary actor involved in unintentionally importing these species, it is critical that this group recognizes its potential impact on this issue.
  - In response to the statement “All steps should be taken to limit invasive species that threaten the ecosystem” the average level of agreement was 7.14 with a standard deviation of 2.91. This suggests that even though this stakeholder group is somewhat unaware of the problems that importation of exotic species can produce, they may be willing to make

appropriate adjustments to behaviors once they are educated about this. Unfortunately, this is anecdotal evidence at best. However, it may be worth inviting members of IPIECA to join the discussions of the CRTC for exotic species so that they can become better informed about this issue.

**Those stakeholders not represented in the survey:**

**Foreign Affairs Ministries** – Foreign affairs ministries qualify as stakeholders due to their high level of influence on the regional agreement process. Additionally, they are critically important actors in lending support the CEP process. Their input to the CEP, through various channels strengthens the institutional legitimacy of CEP, as well as increases the likelihood of its success. There are number of important issue for this stakeholder group to address, through in many cases they do not do it directly. Rather they use channels through other ministries. Nonetheless, environmental issues, by virtue of their largely transboundary nature, must be considered by these stakeholders. Only one survey was completed by a member of this stakeholder group and therefore it can not effectively be added to the analysis.

1. **Decline in Certain Fisheries:** This MPPI has attracted a great deal of international attention because the increasing scarcity of sturgeon, increasing prices of caviar and the criminalization of trade in certain fish products. Though the foreign affairs ministries may choose to not focus extensively on this issue, the international pressures, combined with increasing criminal activities requires some attention to this. The recent rounds of CITES based discussions have brought this into the international arena, though it seems to have faded quite quickly as well. Foreign affairs ministries are in the unenviable position of being required to take some steps towards limiting trade of these fisheries, while in most cases, other government ministries are not very supportive of this. Iran is the obvious exception to this however. Unless the technology evolves that will allow for tagging of hatchlings, or until sturgeon agree to carry passports, this issue will be ongoing and will require the partial attention of the foreign affairs, charged with overseeing international treaties.
2. **Degradation of Coastal Landscape:** The degradation of coastal landscape really is not a priority for members of the foreign affairs ministries stakeholder group. Degradation of coastal landscapes were not a high level concern for any of the other stakeholder groups, and therefore, one could conclude that is would not be for this group either. Further, the degradation of coastal landscapes is concern for environmental ministries, interior ministries, or regional and municipal governments.
3. **Threats to Biodiversity:** This MPPI may not be a priority issue for the foreign affairs ministries stakeholder group. Unfortunately, it is not likely to become a priority until there is a severe crisis, such as a mass proliferation of exotic species which would alter the ecosystem of the Caspian significantly. The recent die-offs of seal and kilka may attract attention of the foreign affairs ministries stakeholder group as it benefits their regional agenda, as a means to influence policies of neighboring states and as a means to influence regional policies. In the event that biodiversity appears to be shifting notably, this may become a much more important issue to the foreign affairs ministries stakeholder group.

4. **Decline in Overall Environmental Quality:** This MPPI, like the decline in biodiversity and decline in certain fisheries, the decline in overall environmental quality is a latent issue for members of the foreign affairs ministries stakeholder group. This decline, or the potential for it is occasionally used by the foreign affairs ministries to push regional hegemonic agendas. By focusing on environmental degradation foreign affairs ministries stakeholder group are able to object to development projects in the region that may have environmental impacts. Often these claims of environmental stewardship are transparently attempts to maintain influence or economic domination in the region.
  
5. **Decline in Human Health:** This MPPI may be a concern to members of the foreign affairs ministries stakeholder group, though at this time, it does not appear to attract significant attention from this group. They are neither directly affected by , nor contributing to this particular issue.
  
6. **Damage to Coastal Infrastructure and Amenities:** This low level MPPI is unlikely to attract attention of the foreign affairs ministries stakeholder group. They are neither directly affected by , nor contributing to this particular issue. The exception to this may be the damage to the Iranian coasts causes by activities in the northern Caspian region which ultimately foul the coastline.
  
7. **Potential Damage from Oil and Gas Development:** This MPPI is often touted by members of the foreign affairs ministries stakeholder group as a reason to limit activities in the region. This results in a struggle for influence in the region, as well as issue of autonomy and independence. However, like the decline in overall environmental quality, and decline in certain fisheries, this concern is a token issue for expressing less desirable political intentions.
  
8. **Introduction of Exotic Species:** Interesting, while this is assumed to be a low level priority MPPI for members of the foreign affairs ministries stakeholder group, it may actually be an issue that will draw more attention in the future, if certain species proliferate as they have in other bodies of water. If this were to occur, the role of CEP may become more politicized in high politics issues.

**Economic Ministries** – The economic ministry stakeholder group was not adequately represented in the stakeholder analysis survey. Nonetheless, they are a very important stakeholder group in regard to the Caspian environment. The distribution and collection of revenues are generally managed through this ministry, and as such they wield tremendous influence in the region. Additionally, they often determine what projects can or cannot survive during economically sparse times. Therefore, this powerful group must be considered when discussing regional stakeholders. In regards to many of the MPPIs, the economic ministry stakeholder group is at least peripheral and often plays a more direct role.

1. **Decline in Certain Fisheries:** The economic ministry stakeholder group influences this issue by allotting funds to hatcheries, law enforcement and fisheries. Though it is not

directly affected, it is indirectly affected. For instance the loss of revenues from illegally poached can not be added to the coffers of the economic ministry stakeholder group. The lack of support for hatcheries in the former Soviet states is somewhat understandable, given the overall decline in state revenues in the post Soviet period. However, this decline also means that there are fewer fish in the Caspian and that the poaching activities that are prevalent in this area further diminish the breeding stocks.

2. Degradation of Coastal Landscape: The economic ministry stakeholder group is partially responsible for this MPPI, because environmental ministries are seriously under-funded and unable to enforce current environmental legislation.
3. Threats to Biodiversity: The economic ministry stakeholder group is partially responsible for this MPPI, because environmental ministries are seriously under-funded and unable to enforce current environmental legislation. Further, the lack of planning and increased need for sustenance level agriculture and grazing of domesticated stocks in environmentally sensitive areas leads to a destruction of habitats.
4. Decline in Overall Environmental Quality: The economic ministry stakeholder group contributes to this by under funding enforcement agencies charged with overseeing environmental legislation in the region. Additionally, the lack of support for communities, forcing the destruction of habitats and leading to environmental decline. It would be especially easy here to place an extraordinary amount of blame on the economic ministry stakeholder group for overall environmental decline. However, it must also be recognized that the neglect of this stakeholder group is not malicious, or even intentional, but rather is most likely due to multiple demands on a finite set of resources. As revenues have become more scarce in the post Soviet period, for the former Soviet states, environmental concerns have fallen by the wayside as basic human needs are addressed by governments, and allotment of capital shifts from controlled management to a free market economy. Therefore, instead of focusing on this, it is important to design environmental policy alternatives that clearly delineate the economic benefits of supporting environmental stewardship.
5. Decline in Human Health: The economic ministry stakeholder group contributes to this problem in two ways, first by failing to provide adequate funding human health concerns, and secondly by not adequately funding environmental enforcement agencies. Though this lack of funding is certainly not malicious, it could potentially lead to such a decline in human health conditions that the legitimacy of the governments may be called into question. Respondents to the survey overwhelmingly agreed that public health should be the concern of the government. Thus, the decline in human health may also directly affect the governments and specifically the economic ministry stakeholder group in the future.
6. Damage to Coastal Infrastructure and Amenities: The economic ministry stakeholder group is partially responsible for this MPPI, because environmental ministries are seriously under-funded and unable to enforce current environmental legislation.

7. **Potential Damage from Oil and Gas Development:** The economic ministry stakeholder group contributes to this potential problem while being affected by it as well. The potential income from the oil and gas activities are expected to contribute significantly to the coffers of the Caspian states. The economic struggles of the 1990's have left these coffers in need of replenishment. In order to many states to improve their conditions, environmental and otherwise, the economic ministry stakeholder group is pressured to provide attractive terms for oil and gas companies in the region. These attractive terms may include lax environmental standards. In the future, the pollution from these activities will be left for the governments to deal with long after the contracts are over, the oil is gone and the revenue from the petroleum resources is spent. Therefore, it behooves the economic ministry stakeholder group to closely consider the future environmental ramifications, and costs, or their current agreement standards.
  
8. **Introduction of Exotic Species:** The economic ministry stakeholder group is partially responsible for this MPPI, because environmental ministries are seriously underfunded and unable to enforce current environmental legislation. Further, as discussed above the economic ministry stakeholder group is in a conundrum of needing to increase revenues yet needing to protect the environment. The potential cost and benefits of implementing measures to reduce the introduction of the exotic species should be very clearly explained to this stakeholder group in order to gain their support for such actions.

**Informal Underground Sector-** This stakeholder group was not represented in the stakeholder analysis survey due to inherent difficulties with identification of and recruitment of this sector in any formal survey processes. Nonetheless, they are an important stakeholder group in regard to the Caspian environment. Additionally, the chronic abuse of power is also attributed to conditions that benefit this sector. This group must be considered when discussing regional stakeholders. It is believed that they have a clear interest in certain issues related to the Caspian Environment, and must be considered when recommending policy adjustments. Further, it is important to consider ways of creating legitimate, formal roles for this sector in order to reduce the recurrent problems associated with the abuse of power. However determining the impact this stakeholder group has in the region is difficult at best because of the scarcity of accurate reporting on and measurement of actual influence. Nonetheless, to dismiss this stakeholder group because of a lack of solid data would be a serious error in this analysis.

1. **Decline in Certain Fisheries:** It is believed that the informal underground sector is involved in creating an incentive structure that results in the propensity for over fishing in some areas of the Caspian. The informal trade in some species and their by-products results in increased need for policing and decrease in the abuse of power. However, in some instances, it is believed that groups involved in this sector are able to create conditions that make abuse of power an especially viable alternative to withstanding poor economic conditions in the region. Therefore, unless this sector is clearly included in any recommendations for fisheries management, in concert with improvement of overall economic conditions, their cooptation of this industry may continue to be problematic in the future.

2. Degradation of Coastal Landscape: The Informal Underground Sector is marginally involved in this MPPI, only within the scope of the abuse of power and influence in certain permitting processes. Though this is largely speculative, it has been suggested that this informal sector has a fair level of influence within some areas of this region with regard to the abuse of power.
3. Threats to Biodiversity: The Informal Underground Sector is not believed to be actively involved in this MPPI, beyond the scope of the issue addressed above.
4. Decline in Overall Environmental Quality: The Informal Underground Sector is not believed to be actively involved in this MPPI, beyond the scope of the issue addressed above.
5. Decline in Human Health: The Informal Underground Sector is not believed to be actively involved in this MPPI, beyond the scope of the issue addressed above.
6. Damage to Coastal Infrastructure and Amenities: The Informal Underground Sector is not believed to be actively involved in this MPPI, beyond the scope of the issue addressed above.
7. Potential Damage from Oil and Gas Development: The involvement of the Informal Underground Sector is largely under-evaluated in regards to this MPPI. Though there may be some influence for certain privileges granted by this sector with regards to this, to date, there are not reliable existing studies to confirm this.
8. Introduction of Exotic Species: The Informal Underground Sector is not believed to be actively involved in this MPPI, beyond the scope of the issue addressed above.

## **Questionnaire for CEP Regional Stakeholder Analysis**

This survey is an important contribution to the Caspian Environment Programme's Transboundary Diagnostic Analysis. The Caspian Environment Programme (CEP) is a regional programme established by the Caspian littoral states and international agencies including The World Bank, United Nations Environment Programme (UNEP), and United Nations Development Programme (UNDP). A goal of the Caspian Environment Programme is to improve the lives of the people in the Caspian region by improving the environment of the Caspian Sea.

The Caspian Environment Programme is eager to develop a set of realistic, achievable objectives that enhance the condition of the Caspian Sea. In order to best serve the Caspian community, it is important to identify its stakeholders.

In order to determine what groups have active interests in the environment of the Caspian Sea, what these interests are, and how these interests relate to other interests in the region, your assistance with this survey is needed. Your answers will be tabulated with others from the region and analyzed to determine those environmental interests that are most pervasive in the region. No individual survey or participant will be identified in any report. Please answer the questions below to the best of your ability, by writing the number of your response in the space provided.

### General Information

1. \_\_\_\_\_ What state are you from? (Please circle one)

Azerbaijan      IR Iran      Kazakhstan      Russian Federation  
Turkmenistan      Other: \_\_\_\_\_

2. \_\_\_\_\_ What type of organization do you represent? (If you represent more than one category, please list these as well.)

1. Environmental Ministry
2. Foreign Affairs Ministry
3. Economic Ministry
4. Agriculture/Fisheries Ministry
5. Energy Ministry
6. Regional Government
7. Municipal Government
8. Non-Governmental Organization (NGO)
9. State owned industry
10. Private industry
11. Multinational corporation
12. Scientific community
13. Educator
14. Public health providers
15. International organization
16. Student
17. Farming/fishing large industry
18. Farming/fishing artisanal industry
19. Other \_\_\_\_\_

3. \_\_\_\_\_ How large is your organization (number of people in the Caspian Region)?

1. 1-10 people
2. 10-50 people
3. 50-100 people
4. 100-500 people
5. 500 + people

4. \_\_\_\_\_ How long has your organization existed?

1. Less than 1 year
2. Between 1 and 5 years
3. Between 5 and 10 years

4. Between 10 and 30 years
5. More than 30 years

#### Perceived Problems and Issues

National experts from Caspian Countries have identified 6 major perceived problems and issues and two emerging problems and issues. Below are a series of statements. We are interested in your opinions regarding these perceived problem and issues. These perceived problems and issues are: decline in certain fish stocks, degradation of the coastal landscape, threats to biodiversity, decline in overall environmental quality, decline in human health, damage to coastal infrastructure and amenities. The emerging perceived problems and issues are: potential damage from oil and gas activities and threats from invasive, exotic species of living organisms.

Please rank order how you would prioritize the perceived problems and issues listed below from a rank of 8 the most important perceived problem and issue to a rank of 1 for the least important perceived problem and issue

- 5.\_\_\_\_\_ Decline in certain fish stocks
- 6.\_\_\_\_\_ Degradation of the coastal landscape
- 7.\_\_\_\_\_ Threats to biodiversity
- 8.\_\_\_\_\_ Decline in overall environmental quality
- 9.\_\_\_\_\_ Decline in human health
- 10.\_\_\_\_\_ Damage to coastal infrastructure and amenities
- 11.\_\_\_\_\_ Potential damage from oil and gas activities
- 12.\_\_\_\_\_ Threats from invasive, exotic species of living organisms

- 13.\_\_\_\_\_ Is there a perceived problem or issue that should be added to this list? If so, what is it?  
(You may list more than one, please answer below)

#### Root Causes

A “root cause” is the reason that something happens, distilled to the most basic level. National experts from the Caspian Countries have identified root causes for the perceived problems and issues listed above. Often several of these perceived problems and issues share the same root cause. Please help us by telling us how important you feel these root causes are to environmental problems in the Caspian.

Please prioritize the root causes, listed in numbers 14 to 25 for level of importance, with 1 = least critical, 2=critical, 3= most critical:

- 14.\_\_\_\_\_ Non-sustainable use of resources
- 15.\_\_\_\_\_ Lack of advanced technologies
- 16.\_\_\_\_\_ Regional poverty
- 17.\_\_\_\_\_ Regional over population
- 18.\_\_\_\_\_ Abuse of power
- 19.\_\_\_\_\_ Lack of sufficient enforcement of current environmental laws
- 20.\_\_\_\_\_ Undefined legal status
- 21.\_\_\_\_\_ Lack of property rights
- 22.\_\_\_\_\_ Sea level change
- 23.\_\_\_\_\_ Lack of public awareness of environmental problems
- 24.\_\_\_\_\_ Weakness in civil society
- 25.\_\_\_\_\_ Weakness in rule of law
- 26.\_\_\_\_\_ What root causes have not been identified in this list? (Please answer below)

### Environmental Attitudes

Below are a series of statements designed to gauge how people think about the environment. We would like to know how strongly you agree or disagree with these statements. Please assign a number to each statement based on this scale of agreement:

Strongly agree                      No opinion                      Strongly disagree  
9                      8                      7                      6                      5                      4                      3                      2                      1

- 27.\_\_\_\_\_ It is more important for people to use the Caspian resources that they need than it is to leave them untouched because of environmental concerns.
- 28.\_\_\_\_\_ The environment of the Caspian must be protected at all costs.
- 29.\_\_\_\_\_ It is possible to develop programs that balance human needs with care for the environment.
- 30.\_\_\_\_\_ People will not care about protecting and preserving the environment if they are hungry and need shelter.
- 31.\_\_\_\_\_ If the economy were stronger, the environment would be cleaner.
- 32.\_\_\_\_\_ The preservation of the Caspian eco-system cannot take place at the same time as oil drilling activities.
- 33.\_\_\_\_\_ There are fewer fish in the Caspian than there used to be because of recent oil drilling.
- 34.\_\_\_\_\_ The environment can be protected without a strong economy.
- 35.\_\_\_\_\_ Government, industry and the public can all agree about how to care for the Caspian Sea.
- 36.\_\_\_\_\_ Multinational Corporations and the energy industry do not care about the environment.
- 37.\_\_\_\_\_ Unless there is a severe environmental crisis in the Caspian region, care for the environment will not be a priority for governments.
- 38.\_\_\_\_\_ Unless there is a severe environmental crisis, care for the environment will not be a priority for the people.
- 39.\_\_\_\_\_ People will not change their lifestyles to protect endangered species.
- 40.\_\_\_\_\_ The government should spend money on the basic needs of people, like housing, health care and good jobs, before it spends money on protecting the environment.
- 41.\_\_\_\_\_ It is more important to protect natural habitats than it is to enhance economic development.
- 42.\_\_\_\_\_ It is possible to have economic growth and environmental protection at the same time.

### Regional stakeholders

- 43.\_\_\_\_\_ Which one of perceived problems and issues most strongly affects your organization?
  - 1. Decline in certain fish stocks
  - 2. Degradation of the coastal landscape
  - 3. Threats to biodiversity
  - 4. Decline in overall environmental quality
  - 5. Decline in human health
  - 6. Damage to coastal infrastructure and amenities
  - 7. Potential damage from oil and gas activities
  - 8. Threats from invasive, exotic species of living organisms
- 44.\_\_\_\_\_ Which of the other issues in question 43 also affect your organization?
- 45.\_\_\_\_\_ My organization/group might be a contributing factor to which of the issues in question 43?
- 46.\_\_\_\_\_ In your opinion, which single group listed below is most responsible for improving the condition of the Caspian environment?
  - 1. Local industries
  - 2. International industries
  - 3. Municipal governments
  - 4. Regional governments
  - 5. Federal governments
  - 6. International organizations
  - 7. Citizen groups/ NGOs

- 8. Coastal Communities
- 9. Fishermen
- 10. Educators
- 11. Other: \_\_\_\_\_

47. \_\_\_\_\_ In your opinion, which group in question 46 is the most likely to bring about positive environmental change in the Caspian environment?
48. \_\_\_\_\_ In your opinion, which group in question 46 will benefit the most from positive change in the Caspian environment?

With which groups in question 46 does your organization work on a regular basis?

With which groups in question 46 does your organization desire to work?

Of the groups listed in question 46, please list all of the groups you believe would be eager to collaborate with your organization with regards to improving the environment?

Does your group work with groups in other Caspian countries? If so, which countries? (Please answer below)

***Thank you for your time and effort!***

**Optional Questions**

There are a set of optional questions below, targeting certain perceived problems and issues. You may choose which sets of questions (if any) you would like to answer, or you may answer all of these. We are very interested in your opinions. These questions are in statement form. We would like to know how strongly you agree or disagree with these statements. Please assign a number to each statement based on this scale of agreement:

Strongly agree				No opinion					Strongly disagree
9	8	7	6	5	4	3	2	1	

**Decline in Certain Fish Stocks**

My grandparents ate more food from the Caspian waters than I do.  
I eat fish from the Caspian at least three times per week.

- 55. \_\_\_\_\_ I think it is safe and healthy to eat fish from the Caspian.
- 56. \_\_\_\_\_ Pollution is the primary reason that there are fewer fish in the Caspian.
- 57. \_\_\_\_\_ Radiation is the primary reason there are fewer fish in the Caspian.
- 58. \_\_\_\_\_ Even if it is illegal, some fish will still be caught for profit.
- 59. \_\_\_\_\_ The fishermen benefit most from the fish they catch.
- 60. \_\_\_\_\_ People, other than fisherman, make money from the illegal fishing of some species.
- 61. \_\_\_\_\_ An enforced system of mutually agreed upon fishing limits would be effective for reducing over-fishing in the Caspian.
- 62. \_\_\_\_\_ There are enough hatcheries to support all commercial fishing stocks.
- 63. \_\_\_\_\_ All barriers to fish migration should be removed.

**Degradation of Coastal Landscape**

- 64. \_\_\_\_\_ Farmers using herbicides and pesticides should be taught natural ways to reduce use of these chemicals. (For instance: organic farming methods, crop rotation, more appropriate crop selection based on climate and soil, genetically engineered crops, training, education, other chemicals or synthetics)
- 65. \_\_\_\_\_ It would be helpful to have coordinated coastal management plans in the Caspian region to help preserve the environment.

- 66.\_\_\_\_\_ There should be fees for water used in the irrigation of crops.
- 67.\_\_\_\_\_ There should be limits on some activities in certain zones of the coastal region.
- 68.\_\_\_\_\_ Landscape degradation is mostly due to human activities, such as oil drilling and pesticide use.
- 69.\_\_\_\_\_ Communities in the Caspian region use forest resources wisely.
- 70.\_\_\_\_\_ Current laws are not strong enough to protect natural resources around the Caspian.

**Threats to Biodiversity**

- 71.\_\_\_\_\_ There should be a network of marine and wetland nature preserves all around the Caspian.
- 72.\_\_\_\_\_ My organization supports strengthening laws protecting sensitive areas even if it limits access to those areas.
- 73.\_\_\_\_\_ There is no problem with how agriculture or industrial chemicals are stored near the Caspian waters.
- 74.\_\_\_\_\_ Agricultural and industrial wastes flowing into the Caspian threaten marine and coastal species.
- 75.\_\_\_\_\_ It is necessary to protect fish spawning sites in the Caspian
- 76.\_\_\_\_\_ There is sufficient sharing of information about environmental quality between groups concerned about the Caspian environment.
- 77.\_\_\_\_\_ The environment of the Caspian is not suffering.

**Decline in Overall Environmental Quality**

- 78.\_\_\_\_\_ There is adequate scientific knowledge about the causes of environmental decline in the Caspian.
- 79.\_\_\_\_\_ There should be more environmental monitoring projects that involve NGOs, scientists and private sector collaboration.
- 80.\_\_\_\_\_ Private industry should take all responsibility for reversing environmental degradation of the Caspian.
- 81.\_\_\_\_\_ Air quality is a significant problem in the Caspian region.
- 82.\_\_\_\_\_ Better technology for environmental preservation would enhance the Caspian region.

**Human Health**

- 83.\_\_\_\_\_ In the Caspian region, the biggest threat to the human population is the lack of safe drinking water.
- 84.\_\_\_\_\_ If there were a stronger economy, people would be healthier in the Caspian region..
- 85.\_\_\_\_\_ People are healthier today than they were 20 years ago in the Caspian region.
- 86.\_\_\_\_\_ Industrial runoff has caused people to be sick.
- 87.\_\_\_\_\_ There is nothing that can be done about human health in the region.
- 88.\_\_\_\_\_ Public health must be the concern of the government.
- 89.\_\_\_\_\_ Radioactive materials have led to a decline in human health.
- 90.\_\_\_\_\_ People would be healthier if the environment were cleaner.

**Damage to Coastal Infrastructure and Amenities**

- 91.\_\_\_\_\_ Soil erosion contributes to the decline in environmental quality of the Caspian.
- 92.\_\_\_\_\_ Coastal cities and towns dump most municipal wastes into the water on the Caspian
- 93.\_\_\_\_\_ Mining activities reduce the water quality of the Caspian.
  
- 94.\_\_\_\_\_ Sea level fluctuation has been responsible for most damage to the coastal infrastructure.

**Oil and Gas Sector Based Contamination**

- 95.\_\_\_\_\_ The Caspian environment would be improved if all oil and gas activities used best available technologies.
- 96.\_\_\_\_\_ A petroleum industry based legal agreement for marine pollution from oil would reduce oil pollution in the Caspian.
- 97.\_\_\_\_\_ There are adequate oil reception facilities in the Caspian region.

**Invasive Species**

- 98.\_\_\_\_\_ I have seen unusual creatures in the Caspian that were not there ten years ago.
- 99.\_\_\_\_\_ All steps should be taken to limit invasive species that threaten the ecosystem.

100.\_\_\_\_\_ Invasive species are creating significant environmental degradation in the Caspian.

**Thank you for your participation in this survey!**

If you have questions or comments, please contact Mary M. Matthews at:

E-mail: [caspianenvironment@hotmail.com](mailto:caspianenvironment@hotmail.com)

Or contact the individual who distributed this questionnaire to you.

**The completed Regional Stakeholder Analysis will be available on the CEP web page later this year. Please visit <http://www.caspianenvironment.org>**