Discussion on Biodiversity Conservation in the Process of Ecological Civilization Construction

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I Background of Ecological Civilization Construction
In 1962, the book of *Silent Spring* written by Rachel Carson set off an alarm bell like a sudden sound of thunder from ground, giving rise to the prolonged Greenpeace movement.
In 1972, UNHEC (United Nations Conference on the Human Environment) issued the *Declaration on the Human Environment* which proposed that humans had only one earth and we needed to take care of it. The publication of *Limits to Growth* and Humanity Is Being in the Turn issued by the Club of Rome promoted the climax of Greenpeace movement.
In 1987, *Our Common Future*, the programmatic document of the World Commission on Environment and Development, proposed the viewpoint of sustainable development. At the end of 1980s, governments of different countries began to absorb the ecological environmental protection into their administration contents.
In 1992, the United Nations Conference on Environment and Development and the publication of two programmatic documents, *Rio Declaration* and *Agenda 21*, gave a further approval for the strategy of sustainable development and indeed opened the prelude to the era of ecological civilization.
In 2002, the World Summit on Sustainable Development confirmed that economic development, social progress and environmental protection jointly constitute the three pillars of sustainable development.
In 2012, the United Nations Conference on Sustainable Development clarified the role of green economy in sustainable development, and proposed the institutional framework of sustainable development.
2. Domestic Background

(1) Development of economy and society

- 1978: 360 billion, 2013: 56.61 trillion, **155 times**, an average annual increase of **9.8%**
The industrial structure is dominated by the secondary industry in a long term.

1978: 28.2: 47.9: 23.9, 2013: 10.1: 44.1: 46.3
The proportion of the secondary industry basically keeps up and down 45% during last 30 years.
Population: 1949: 542 million, 2013: 1361 million, 2.5 times
Urbanization: 1949: 10.64%, 2013: 53.7%, increasing by 43.0%
Less than 20% of Chinese population is distributed on two/threes ecological balance areas and ecological surplus areas, but 80% of population is intensively distributed on the one/threes ecological deficit areas.

Spatial Pattern for Supply-Demand Balance of China’s Ecological Carrying Capacity
In 2013, the total water consumption in China reached 617 billion m³ with an increase of 12.2% compared with 2000; water consumption per 10,000 GDP reached 108.5 m³, 5 times than the world average level.

Agricultural water consumption is staying at a high level. The agricultural water consumption reached 390 billion m³ in 2013 accounting for 63.2%. The effective availability of agricultural water consumption was about 40%, far lower than the level of developed countries.
Huge total volume and rapid increase of energy consumption

Future source energy demand in China is tremendous.

China will face with a energy gap of at least 1 billion tons standard coal by 2020.

<table>
<thead>
<tr>
<th>Institution</th>
<th>2015</th>
<th>2020</th>
<th>2030</th>
<th>2035</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEA(2010)</td>
<td>41.2</td>
<td>45.1</td>
<td>51</td>
<td>53.4</td>
<td>-</td>
</tr>
<tr>
<td>IEA(2010)</td>
<td>36.5</td>
<td>43.7</td>
<td>58.6</td>
<td>65.5</td>
<td>-</td>
</tr>
<tr>
<td>IEEJ(2010)</td>
<td>-</td>
<td>36.3</td>
<td>45.2</td>
<td>49.3</td>
<td>-</td>
</tr>
<tr>
<td>CAE</td>
<td>-</td>
<td>40.7-43.5</td>
<td>45.5-49.5</td>
<td>-</td>
<td>51.9-57.9</td>
</tr>
<tr>
<td>ERI of NDRC</td>
<td>-</td>
<td>38.5-47.7</td>
<td>-</td>
<td>46-58.5</td>
<td>50.2-66.9</td>
</tr>
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</table>

China’s GDP in 2010 accounted for about 9% of the world, but the energy consumption accounted for 19% of the world, unit GDP energy consumption 2.5 times than global average level.
(3) Environmental Pollution

Water pollution

The major control section of ten major basins, such as Yangtze River and Yellow River, the proportion of water quality for IV～V categories is 19.3%.

The proportion of sea water quality worse than Grade IV category is 18.6%.
Air pollution

In 2013, the proportion of average days up to the standard was 60.5%. There were 17 cities that the proportion of that was lower than 50%.

<table>
<thead>
<tr>
<th>Region</th>
<th>Total number of cities</th>
<th>SO₂</th>
<th>NO₂</th>
<th>PM₁₀</th>
<th>CO</th>
<th>O₃</th>
<th>PM₂.₅</th>
<th>Comprehensive standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beijing-Tianjin-Hebei Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Yangtze River delta region</td>
<td></td>
<td>25</td>
<td>25</td>
<td>10</td>
<td>2</td>
<td>25</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>Pearl River Delta Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>0</td>
</tr>
</tbody>
</table>

Number of cities in which different pollutants meet standards in major regions in 2013

Days of different air quality levels in 74 cities of 2013

- Fine: 47.6%
- Mild: 22.9%
- Moderate: 8.0%
- Heavy: 6.2%
- Severe: 2.4%
- Superior: 12.9%
Fog and Haze

Sketch Map of Haze Days Distribution in China in 2013

Legend
Unit: Day

The number of haze days of most areas in mid-east China was 50～100 days.
The area of soil erosion in China is 3.65 million sq km, accounting for 37.2% of national territorial area.
The area of desertification land was 2.6237 million sq km, accounting for 27.3% of national territorial area.
Sharp Decline in Biodiversity

a Threatened wild plants exceed 4,000 species, in which more than 1000 species in an endangered state. The endangered proportion of wild higher plant reaches 15% to 20%, and that of gymnosperm and orchid reach up to 40%.

a There are 233 species of vertebrates are faced with extinction. The number of about 44% of wild animals is showing a trend of decline, in which the population of wild animals except from national priority protection has obvious declining trend.
Facing with these issues, the 18th National Congress of the CPC proposed “Put the ecological civilization construction on a more prominent position and integrate it into all the aspects and the whole process of the economic construction, political construction, cultural construction and social construction”.

- Optimize the development pattern of national land
- Construct a resource-saving and environment-friendly society
- Make more efforts to protect natural ecosystems and the environment
- Strengthen the system construction of ecological civilization
II Urban Biodiversity Conservation Situation in the Process of Ecological Civilization Construction
1995  National ecological construction demonstration area

2003  National ecological province (city, county, district)

2013  demonstration area of ecological civilization
• there are over 500 national ecological cities (counties) were completed at present.

• so far, there are total 125 areas were included into demonstration areas.
The targets system of ecological cities and demonstration area of the ecological civilization include three aspects: economy, society and environment. There are five targets and six targets concerned with biodiversity conservation respectively in the ecological cities and demonstration areas of the ecological civilization.

<table>
<thead>
<tr>
<th>Ecological cities (counties, districts)</th>
<th>Demonstration areas of the ecological civilization construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Species protection index</td>
<td>Invasion of alien species</td>
</tr>
<tr>
<td>2 Forest coverage rate</td>
<td>Ecological asset</td>
</tr>
<tr>
<td>3 Proportion of protected land accounting for national land</td>
<td>Red line of ecological protection</td>
</tr>
<tr>
<td>4 green space area for per person</td>
<td>Forest coverage rate</td>
</tr>
<tr>
<td>5 Recovery rate of degenerated soil</td>
<td>Proportion of the protected land</td>
</tr>
<tr>
<td>6</td>
<td>Urban and rural per capita public green areas</td>
</tr>
</tbody>
</table>
Discussion on Biodiversity Conservation under the Background of Ecological Civilization Construction
Since China performed *Convention on Biological Diversity* from 1993, Chinese government has issued a series of strategies and plans of biodiversity and ecological protection, including *China Action Plan for Biodiversity Conservation, National Program on Resource Protection and Use Planning for Biological Species, National Main Functional Areas Planning*, etc.

However, with the development of economy and society as well as the growth of population in the future, the situation of biodiversity conservation is still severe. Thus, some reforms are required, mainly including:

1. Transform the concept
2. Transform the object
3. Transform the core
4. Transform the method
5. Transform the system
Biodiversity protection is not aimed at protecting species, but shall be regarded as a means to ensure ecological safety, support economic development and promote social harmony in the process of ecological civilization construction. Therefore, biodiversity protection shall be turned from a comparatively micro level for protecting species, to a comparatively macro level for systemic protection.
2 Transform the object

The object of biodiversity conservation shall be transformed from micro species protection to macro ecological system protection.
3. Transform the core

Species protection
Humans and the nature

The core of biodiversity protection requires the transformation from single species protection to the coordinate development between humans and the nature.
4. Transform the method

The method of biodiversity protection requires the transformation from establishing nature reserves to establishing nature reserves and ecological functional areas.
5. Transform the system

Biodiversity protection not only needs to conduct by mandatory laws and rules as well as measures like strict law enforcement, but also shall play both blocked and sparse measures, and try incentive measures such as the compensation, revenue and the differentiation of performance evaluation.
Thank You!