Human society and coastal ecosystems are very closely interlinked and interdependent. A vast majority of the population live in coastal areas, and depend on marine and coastal resources for food, employment and income. Focused assessments made by United Nations University (UNU) indicate that this human dependence on the life-sustaining coastal resources is under threat from a range of destabilizing effects associated with human activities, including different forms of pollution and over exploitation (Adeel and King, 2002). Coastal communities need to respond to these issues with informed management of coastal areas, and to share the lessons that they have learned in rising to this challenge.

Many efforts have been made to improve this situation in accordance with Chapter 17 of Agenda 21, which calls for integrated coastal management. There is a consensus that integrated and sustainable coastal resources management and planning is a way of meeting the needs of coastal communities without destroying the coastal environment. The pressures placed on coastal ecosystems by over-exploitation for commercial and population-related reasons are briefly described here. An array of strategies is required to solve these increasingly multi-layered problems along with community-oriented approaches at various levels.

I. Degradation of Coastal Ecosystems
The health of coastal ecosystems ensures the viability and health of coastal communities that are dependent on them. Conversely, over-exploitation and unsustainable practices by coastal communities can be a major factor in coastal degradation. A number of cases of accelerated ecological degradation due to human influence can be cited. Perhaps the most poignant example is the destruction of mangrove forest in tropical and sub-tropical regions of the world. It is estimated that by mid-1990’s, about a quarter of the world’s mangrove forests had been destroyed (Adeel and King, 2002). Similarly, over-fishing and destructive fishing have put a vast majority of coral reefs the world over at high level of risk. Other factors like global warming, mining for commercial purposes, land-based pollution and tourism have further exacerbated the damage to coral reefs. In the Southeast Asian region, it is estimated that coastal development and sedimentation threaten about 20% of the coral reefs (WRI, 2000).

National, regional and global efforts are under way to monitor the impacts on coastal ecosystems and to understand the existing level of degradation. As an example, the Global Ocean Observing System (GOOS) provides a predictive understanding of coastal ecosystems through regional to global networks that link observation and analysis in a timely manner. A multi-year coastal monitoring programme conducted by UNU in the Asia Pacific regions shows a gradual decline in land-based agro-chemical pollution.

II. The Driving Forces Behind Coastal Degradation
Socioeconomic and demographic changes are the key drivers behind the vast degradation of coastal areas on a global scale. Population growth is an important driver; however, even more important is the trend of migration towards coastal areas that is linked to urbanization and the
often haphazard growth of coastal communities. Lack of proper planning leads to either large-scale development in sensitive coastal ecosystems or semi-urban slums that lack the most basic infrastructure. Industrialization is another leading driver of coastal degradation through the introduction of land-based pollution into coastal areas and shipping-based commerce.

Coastal communities are often poor and lack sustainable sources of livelihoods that do not put pressure on the coastal environment. When combined with the other simultaneous pressures that are created on the same resources by commercial exploitation, construction and waste-disposal, this invariably leads to a vicious circle of coastal degradation and impoverishment of dependent communities.

Numerous transboundary influences are also driving factors behind coastal degradation. Extraneous demands for exotic fish species and ornamental reef lead to depletion and destruction in coral reefs. Similarly, mangroves forests in impoverished tropical communities are harvested and destroyed to produce charcoal for consumption in other countries in colder climates. Tourism is yet another form of transboundary influence on coastal ecosystems. Without proper management tools and provisions, many forms of tourism – including the so-called ‘ecotourism’ – result in degradation of coastal ecosystems.

III. Strategies for Protection of the Coastal Environment
A number of key strategies must be following to ensure protection and conservation of coastal ecosystems; these include:

- Involvement of communities in design and implementation of coastal management approaches; particular emphasis should be on introducing supplementary – rather than alternative – livelihood options.
- Raising the awareness of various stakeholders is crucial, and popular media and NGOs can play an important role in this.
- There should be systematic and sustained effort to map threats to coastal ecosystems; this will greatly help in prioritizing action and focusing limited financial and human resources.
- It is essential to develop regional and international policy frameworks that help ameliorate some of the transboundary and regional impacts on coastal ecosystems.
- In order to undertake these approaches, human and institutional capacity development in poor coastal communities is absolutely critical.

References

WRI, 2000. Regional Reefs at Risk: South East Asia, World Resources Institute, USA.