Safety and Security

Based on Maslow's hierarchy of basic human needs, once physical needs are relatively satisfied, safety needs take precedence. Personal security can be linked to unemployment, poverty, education level and social cohesion, and is most often evaluated using crime rates, number of accident-related injuries and deaths, and perceived safety. In basic terms, safety and security can be described as freedom from harm (physical security-personal and national), but is also described by measures related to financial security. Economic security is evaluated in the event of unemployment, sickness, widowhood, old age and disability. These measures can be linked to economic services of employment and income and heavily associated with social nets provided through the provisioning of social services, particularly financial assistance and healthcare. Our sense of safety and security can be altered in the wake of technological and natural disasters due to degradation of ecosystems, economic loss, and increased reliance on social safety nets and recovery services. From the ecosystem services perspective, clean water and air, sufficient food production and natural hazard protection significantly contribute to our sense of safety and security through direct relationships to our health via exposure to pathogens and contaminants, food supply and prevention of loss of life and property (MEA 2005). Additionally, there is a comfort derived from knowing that we are not on the brink of environmental problems and that natural system will be conserved for future generations (Higginbotham et al. 2007).

Relationship to Ecosystem Services:

The domain of safety and security is frequently evaluated using violent crime and property crime rates combined with measures of perceived neighborhood safety. Green spaces in urban areas have been linked to a reduction in neighborhood crime, especially in inner city neighborhoods (Kuo and Sullivan 2001). Urban green spaces provide opportunities for simultaneous users and increased throughput which in combination deter criminal behavior; however, densely vegetated areas often evoke feelings of insecurity (Kuo and Sullivan 2001, Kuo 2010). In some cases, natural areas appreciated for aesthetic and therapeutic value and recreational opportunities may also be perceived by some as "scary" places, concealing criminal activities or harboring dangerous animals, poisonous plants and vector borne disease (Louv 2005, Milligan and Bingley 2007). In reference to accident-related injuries, more specifically traffic accidents, there are opposing views on the role of roadway vegetation. Roadside aesthetic appeal has been reported to positively affect driver behavior by promoting a calming effect and reducing speeding and driver fatigue (Cackowski and Nasar 2003). Conversely, traffic engineers and city planners purport that roadside vegetation introduces collision hazards, reduces traffic visibility and distracts drivers (Wilde 2010). Similarly, public perceptions may present conflicting valuations of ecosystems such as wetlands, which are valued for species diversity, habitat and recreational areas, but also depreciated because of associated vector borne diseases such as West Nile virus (Barbier et al. 1997). Because of the multitude of conflicting perceptions, the fear of nature and lack of public knowledge regarding ecosystem goods and services benefits, the evaluation of the contribution of ecosystems to safety and security is not as clear cut as the influence of economic and social drivers. However, clarifying these relationships through education and inclusion of public perception and preferences could help mitigate these differences towards a better understanding of the linkages between ecosystems and the domains of well-being. A common understanding of nature's benefits is vital to sustainable well-being.

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For more information and a complete list of citations: U.S. EPA. 2012. Indicators and Methods for Constructing a U.S. Human Well-being Index (HWBI) for Ecosystem Services Research.