







level is significantly improved, and energy-economy-environment system is direct to harmonious and stabilize, but the difference between Changsha, Zhuzhou and Xiangtan is obvious.

The evaluation for energy efficiency should be based on economic efficiency, environment efficiency and ecological efficiency. Chang-Zhu-Tan's the medium and long-term energy development strategy should take into account the above aspects, but should also take into account the harmonious development of energy, economy and environment as well as the objective differences among regions.

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### References

[1] [http://en.wikipedia.org/wiki/Sustainable\\_development](http://en.wikipedia.org/wiki/Sustainable_development)  
[2] Visualising Sustainability. Posted by Samuel Mann under Computing for Sustainability.

[3] Barbier, E. (1987). "The Concept of Sustainable Economic Development". *Environmental Conservation* 14(2): 101–110.  
[4] Pearce, D.; Markandya, A.; Barbier, E. (1989). *Blueprint for a green economy*. London: Earthscan.  
[5] Hamilton, K.; Clemens, M. (1999). "Genuine savings rates in developing countries". *World Bank Econ Review* 13 (2): 333–356.  
[6] Dasgupta, P. (2007). "The idea of sustainable development". *Sustainability Science* 2 (1): 5–11.  
[7] Heal, G. (2009). "Climate Economics: A Meta-Review and Some Suggestions for Future Research". *Review of Environmental Economics and Policy* 3 (1): 4–21.  
[8] Ayong Le Kama, A. D. (2001). "Sustainable growth renewable resources, and pollution". *Journal of Economic Dynamics and Control* 25 (12): 1911–1918.  
[9] Endress, L.; Roumasset, J.; Zhou, T. (2005). "Sustainable Growth with Environmental Spillovers". *Journal of Economic Behavior and Organization* 58 (4): 527–547.  
[10] Stavins, R.; Wagner, A.; Wagner, G. "Interpreting Sustainability in Economic Terms: Dynamic Efficiency Plus Intergenerational Equity". *Economic Letters* 79(3): 339–343.  
[11] Korowitz, David (2012), *Ignorance by Consensus*, Foundation for the Economics of Sustainability  
[12] Brown, L. R. (2011). *World on the Edge*. Earth Policy Institute. Norton.  
[13] Saaty, Thomas L.; Peniwati, Kirti (2008). *Group Decision Making: Drawing out and Reconciling Differences*. Pittsburgh, Pennsylvania: RWS Publications.