

NO SUBSTITUTION OF TRADITIONAL FUELS

Dr. W.S. Hulscher, FAO-RWEDP, Bangkok

The World Bank correlates the share of biomass energy per capita with GNP per capita for 80 countries, which clearly shows a declining trend (WB, 1996, see Figure 1). In these types of analyses biomass energy is considered a traditional fuel.

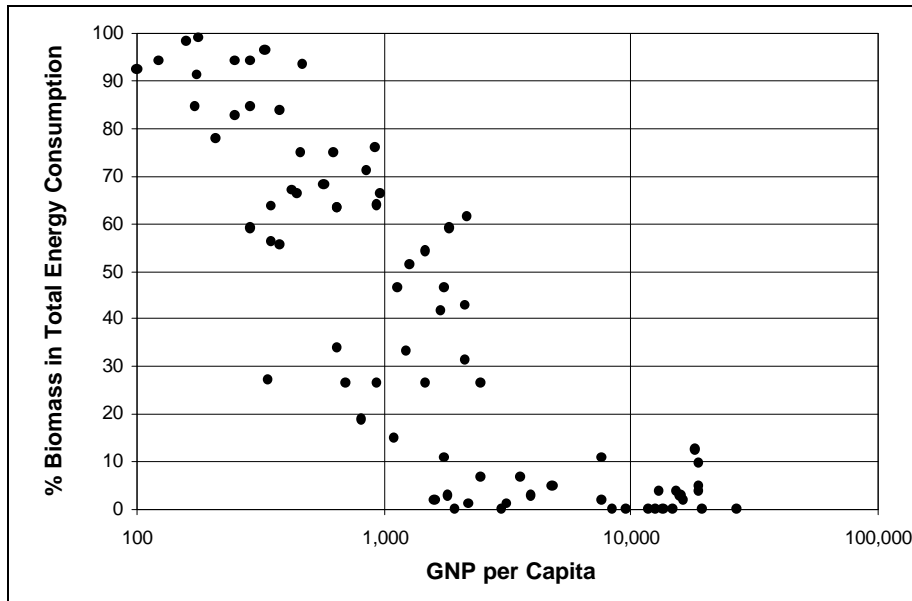


Figure 1 The use of biomass in relation to GDP in 80 countries (World Bank, 1996)

A different picture is obtained when the consumption (rather than the share) of biomass energy per capita is plotted against GNP per capita. This is shown in Figure 2 for 16 countries in Asia where more than 80% of the world's biomass energy users happen to live. No trend whatsoever appears.

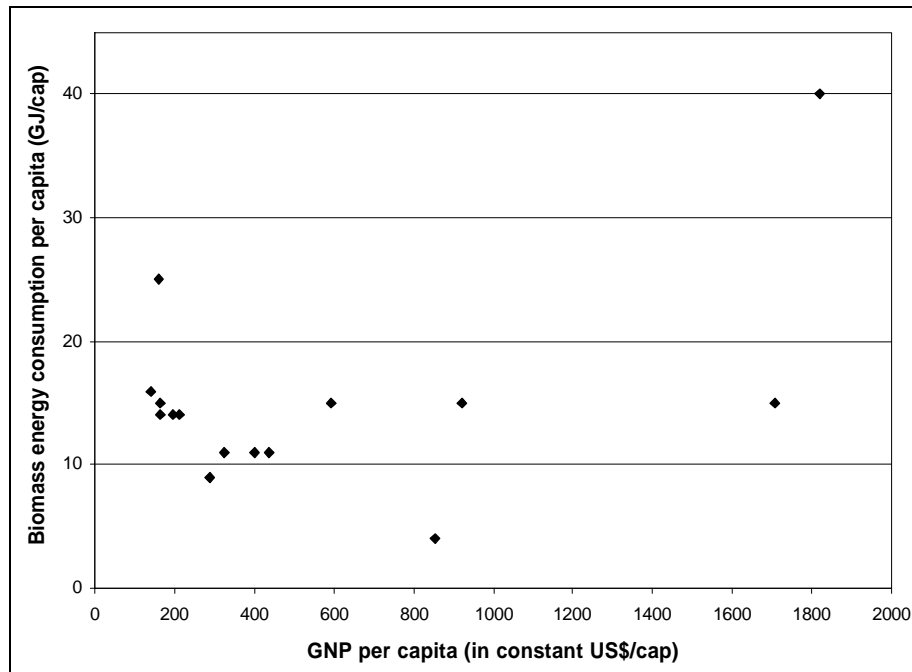


Figure 2 Biomass energy consumption/capita vs. GNP per capita in 1987 for 16 countries in Asia

Clarification can be obtained by analysing historical data for countries. Figure 3 shows that for example for Thailand biomass energy consumption per capita actually increased substantially in a period of time when GDP per capita almost tripled (the bulk of the increase has been in the domestic sector). Similar trends appear in other countries in Asia. It should be noted that the data refer to per capita increases. On top of that comes, of course, increase due to increasing population numbers.

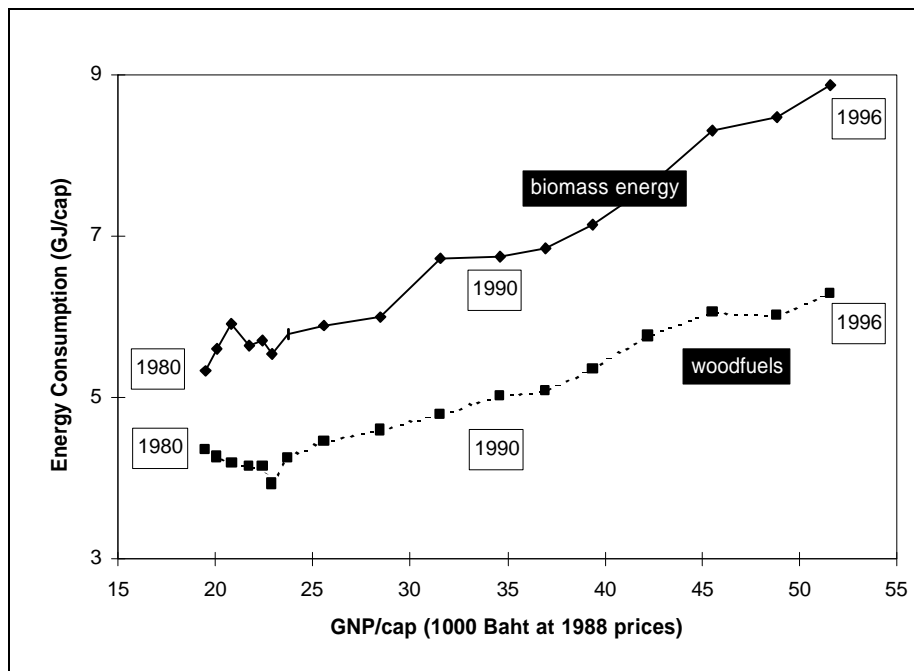


Figure 3 Wood/biomass energy consumption/capita vs. GNP per capita, 1980-96 in Thailand (DEDP)

It is further relevant to note that in 1987 GNP/cap in North America was 40 times larger than in South and Southeast Asia, but biomass energy consumption per capita was the same in both sub-continent (Hall, 1997). More recent data (for 1993) confirm this picture, and it is noted that more than one third of the biomass energy in the USA is consumed in the residential sector (IEA).

The evidence shows that increase in GDP/cap does not lead to a decrease of national consumption of biomass energy per capita. In fact, the opposite may be true. What Figure 1 actually shows is that fossil fuels like oil, gas and coal may increase faster than biomass with increasing GDP/cap. Contrary to common believe, it can not be concluded that people shift away from biomass energy when GDP/cap increases. This is relevant for policies aiming at assisting people's priorities in energy needs.

References

World Bank (1996), *Rural Energy and Development - Improving Energy Supplies for Two Billion People*, World Bank, 1996.

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Hall, D.O. (1997), *Biomass Energy "forever" in Non-OECD Countries? - Why it is important to know what is going on and How this can be determined*, Biomass Energy: Key Issues and Priority Needs, Conference Proceedings, IEA, OECD, February 1997.

IEA, Annual Statistics OECD-IEA.

RWEDP (1997), *Regional Study on Wood Energy Today and Tomorrow in Asia*, Field Document 50, Regional Wood Energy Development Programme in Asia, Bangkok, Thailand.

The above paper is a shortened version of the paper on 'Fuel Complementation rather than Substitution' in Wood Energy News (Vol.12, No.2, p.20). RWEDP's analysis has been welcomed by various experts. Many readers consider the paper thought provoking, and some expressed critical reactions. Main points of critique are discussed below.

Reader: Your data can not be correct, because they are contrary to my firm belief.

RWEDP: The concept of 'fuel transition' has been firmly installed in many minds, probably because of two major reasons. First, a transition is often observed by individuals in their own life. However, such observations mean little for overall national effects. Second, the widely published graphs of biomass energy as a share of total energy suggest a downward trend. However, such graphs do hide what actually happens to biomass energy in absolute terms.

Reader: There is no basis to conclude that biomass energy is really directly proportional to GNP.

RWEDP: That is correct, and RWEDP does not conclude that. What RWEDP shows is that biomass energy does not generally go down with GNP, contrary to common belief.

Reader: The trend in Thailand must be due to industrial use.

RWEDP: Available data show that this is not the case. But even so, industrial use has not been and should not be excluded.

Reader: Thailand is different, because there they use charcoal and cook animal food.

RWEDP: No biomass fuel and no energy end-use activity has been or should be excluded. Thailand has it's own valid reasons to stick to wood energy. Other countries may have other reasons, which are valid to them. RWEDP took Thailand as an example, because in the region that country has the most complete set of biomass energy data.

Reader: If you leave out the four points at the right in your graph of Asian countries, the World Bank's findings would be supported.

RWEDP: Leaving out four points from 15 would be too much. We should not select our data in order to support some hypothesis. Note that the 15 countries in Asia represent the majority of the world's biomass energy consumers.

Editor: Your paper can not be accepted because it contradicts the energy transition literature.

RWEDP: Let's not shun the debate. RWEDP is open for counter-evidence. Incidentally, the issue here is not to come up with case studies, but to critically analyse and document trends in national wood/biomass energy consumption.

Reader: Analysis of data would definitely show the shift.

RWEDP: RWEDP analysed the best available data from developing countries in Asia, and the shift was not found. Generally, problems do occur with availability and quality of biomass energy data, because many figures are based on out-dated assumptions.

Reader: I think modern fuels substitute for the traditional ones, like computers substitute for paper, and concrete for bricks.

RWEDP: Check your examples!

Reader: You seem to ignore that biomass is a dirty and inconvenient fuel.

RWEDP: RWEDP maintains that nothing is wrong with the fuel. Clean, convenient and efficient biomass energy technologies exist, but they are still to reach most users in Asia. North America consumes as much biomass fuel per capita as South and Southeast Asia. The main differences are in the technologies available to the users.

Reader: You may be right, but woodfuel use should be discouraged, because it leads to deforestation.

RWEDP: It has been shown that this is generally not the case (see RWEDP Field Document No. 50). Most wood energy in Asia is used on a sustainable basis. This is fortunate from the point of view of limiting greenhouse gas emissions.

Reader: The curve of biomass energy versus GNP/cap might be bell-shaped.

RWEDP: Long-term speculations are interesting. What will be the people's fuel for two billion biomass energy users in Asia 50 years from now? However, the more pressing issue in Asia is that most of the people find themselves in a certain position which is not likely to change substantially in the next 20-30 years. Effective policies should acknowledge this position.

Reader: The World Bank can not be wrong.

RWEDP: Of course, The World Bank has good reasons to justify its policies. RWEDP provides complementary information on Asia, which is highly policy relevant.

Reader: Like what?

RWEDP: Acknowledging the important current and future role of biomass energy, the main policy implications are: (1) provide relatively more support to the introduction of clean and efficient biomass energy technologies; (2) develop the production and marketing of biomass fuels; (3) encourage the use of biomass energy for social, economic and environmental reasons.