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**Autor:** Burri, Peter

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## Peak Oil and Gas – A Reply

Peter Burri<sup>1</sup>

Reply to the paper of W. H. Ziegler, C. J. Campbell and J. J. Zagar 2009: Peak Oil and Gas. Swiss Bulletin for Applied Geology, 14/1+2, 81–90.

The authors of the above article have criticized the analysis of the reach of oil and gas reserves that I had presented in my earlier paper in this Bulletin (Burri 2008). It is unfortunate that the authors do not provide the sources and the evidence for their very general and often speculative statements; this makes it difficult for the reader to follow the arguments. The authors do present a very lengthy bibliography but unfortunately without cross references to their text (there are only two cross references, one to a paper by the co-author Campbell and one to my paper).

The initiators of the peak oil movement have the merit of having drawn public awareness to the fact that fossil resources are finite and that we have to speed up the work on developing alternatives. What has unfortunately been largely ignored by «Peak Oil» is the enormous impact that technological progress has on extending the reach of fossil resources. I like to stress that the majority of the additions represent a real growth of the resource base and not just an acceleration of production, as claimed in the article of Ziegler et al. When the recovery factor in fields is increased or when previously unproducable source rocks or tight sands are being successfully tapped for gas then these are genuine new volumes that have

not existed in the previous world resource base. These additions DO significantly extend the reach of oil and gas. Technological progress has already added many additional decades to the supply of the world in fossil energy and this trend is gaining momentum.

In the 2<sup>1</sup>/<sub>2</sub> years since my paper was published, its message – that technology has the capacity to dramatically change all previous energy forecasts – has been strongly reinforced. What is happening at present in the worldwide supply of gas is nothing short of a revolution that will drastically change our outlook on fossil fuels (see the paper in this Bulletin: Burri 2010). Only a few years ago the gas peak was predicted to lag the oil peak by some 10 years at most (somewhere between 2030 and 2040); Ziegler et al. predict in their paper the gas peak even as early as the year 2020 (their Fig. 2). In the real world we now have a situation where gas (one of the cleanest fuels) is most likely going to grow massively to be the prime fuel of the world, substituting in the next decades – and possibly beyond this century – oil and later coal. This revolution has been brought about almost exclusively by advances in technology (drilling, fracking, seismic resolution), and that is exactly what I tried to demonstrate in my 2008 paper, not anticipating that this technological impact would materialize so shortly and at this amazing scale.

<sup>1</sup> Holbeinstrasse 7, CH-4051 Basel

The question of the Peak Oil Group is: «*What*

*are we doing about the impending end of the fossil energy resources?».* I think this is the wrong question. The future of our energy supply is not a question of do-ability or of the limited geological availability of fossil resources. The remaining coal, gas- and even oil resources contain still a multiple of the volumes that we have used up so far. The real questions we need to ask ourselves is «*Can we afford it?»* and «*Do we want it?»*. We may not want to or we may not be able to provide the enormous financial resources necessary to secure the fossil energy supply (E&P investments are now > 1 billion USD/day and may have to multiply). We may not want to burn more fossil fuels for environmental reasons. We may not want the surface impacts of unconventional oil mining. These are the questions to ask and the decisions to take. The answer is largely dependent on whether there are sufficient clean, easily storable and transportable and – above all – affordable alternative energy sources available.

Fossil fuels (without nuclear) are covering today over 86% of all the energy needs of the world; only fossil fuels can provide the necessary bridge to renewable energy. It is therefore rather short sighted to play one energy source against the other. The option that we have is not fossil fuels OR renewables, the only realistic option for the world is a controlled transition to new energies where both fossil AND renewable resources are co-existing for a very long time to come. Fortunately there are enough bright young geologists and engineers, perfectly capable to find the solutions for this transition – let them do the work.

## References

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