Accepted Manuscript

Water Footprint Assessment of Coal-based Fuels in China: Exploring the Impact of Coal-based Fuels Development on Water Resources

Xiaomin Xie, Tingting Zhang, Jiachun Gu, Zhen Huang

PII: S0959-6526(18)31528-2

DOI: 10.1016/j.jclepro.2018.05.182

Reference: JCLP 13039

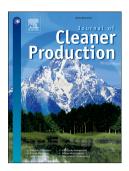
To appear in: Journal of Cleaner Production

Received Date: 1 March 2017

Accepted Date: 21 May 2018

Please cite this article as: Xie X, Zhang T, Gu J, Huang Z, Water Footprint Assessment of Coal-based Fuels in China: Exploring the Impact of Coal-based Fuels Development on Water Resources, *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.05.182.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



ACCEPTED MANUSCRIPT

Water Footprint Assessment of Coal-based Fuels i		Water Footprint	Assessment of	Coal-based	Fuels	in
--	--	------------------------	----------------------	-------------------	--------------	----

China: Exp	ploring the l	Impact of	Coal-based	Fuels

Development on Water Resources

4	Xiaomin Xie*, Tingting Zhang, Jiachun Gu, Zhen Huang
5	School of Mechanical Engineering, Shanghai Jiao Tong University
6	No. 800, Dongchuan Road, Minhang District, 200240 Shanghai, PR China

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

1

2

3

Abstract: During the last decade, and despite the fact that energy consumption and GHG emissions still remain today the focus of many alternative fuel life cycle assessments, water scarcity issues have increasingly received attention. This study is intended to evaluate the life-cycle water footprints (WF) of coal-based fuels including direct coal to liquid (CTL) fuels, indirect CTL fuels, coal-based methanol, and coalbased dimethyl ether (DME). Furthermore, the impacts of coal-based fuels' development on the local water resources were also estimated. The results indicated that the life cycle WF of direct CTL, indirect CTL, Methanol and DME were 2.59 kg/MJ, 2.97 kg/MJ, 4.13 kg/MJ and 3.22 kg/MJ, respectively. Grey WF accounted for more than 80% of the total life cycle WF for these coal-based fuels. It is estimated that the total water demand is 6,177 million cubic meters if 90.6 million tons of coalbased fuel production capacity is fully achieved in China. Regional analyses revealed that Coal-based fuel development in provinces such as Ningxia, Inner Mongolia, Shaanxi, Guizhou and Shanxi could have a significant impact on local water supply and potentially displace other users, especially for Ningxia province, which suffers from extreme water shortage. Xinjiang have appropriate water resources and capacity for future development of coal-based fuel production. Waste water treatment, strict

Download English Version:

https://daneshyari.com/en/article/8093892

Download Persian Version:

https://daneshyari.com/article/8093892

<u>Daneshyari.com</u>