



JRC TECHNICAL REPORTS

WELL-TO-WHEELS Appendix 2 - Version 4.a

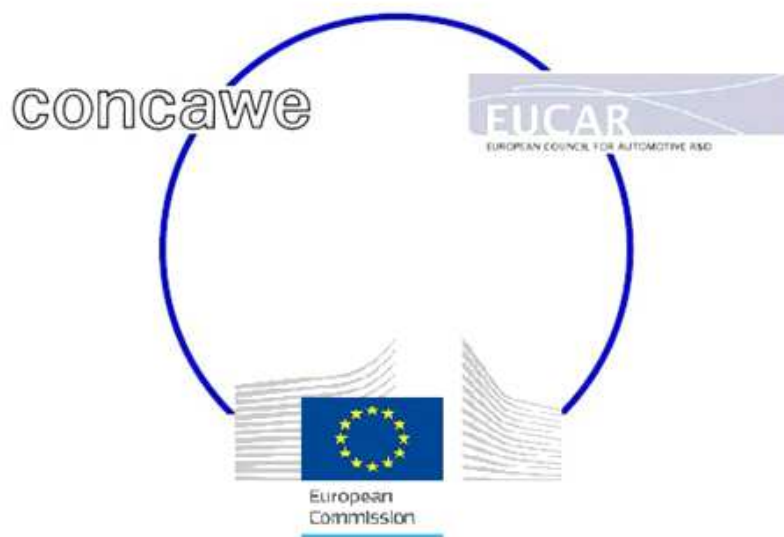
Reference List

WELL-TO-WHEELS ANALYSIS OF FUTURE AUTOMOTIVE FUELS AND POWERTRAINS IN THE EUROPEAN CONTEXT

Authors: Robert EDWARDS (JRC), Heinz HASS (EUCAR), Jean-François LARIVÉ (CONCAWE), Laura LONZA (JRC), Heiko MAAS (EUCAR), David Rickeard (CONCAWE)

Editors: Simon Godwin (EUCAR), Heather Hamje (CONCAWE), Alois Krasenbrink (JRC), Robin Nelson (CONCAWE), Kenneth D. Rose (CONCAWE)

2014



European Commission
Joint Research Centre
Institute for Energy and Transport

Contact information

Laura Lonza

Address: Joint Research Centre, Via Enrico Fermi 2749, TP 230, 21027 Ispra (VA), Italy

E-mail: laura.lonza@ec.europa.eu

Tel.: +39 0332 78 3902

Fax: +39 0332 78 6671

<http://iet.jrc.ec.europa.eu/>

<http://www.jrc.ec.europa.eu/>

This publication is a Technical Report by the Joint Research Centre of the European Commission.

Legal Notice

This publication is a Technical Report by the Joint Research Centre, the European Commission's in-house science service.

It aims to provide evidence-based scientific support to the European policy-making process. The scientific output expressed

does not imply a policy position of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of this publication.

JRC85329

EUR 26236 EN

ISBN 978-92-79-33887-8 (PDF)

ISSN 1831-9424 (online)

doi:10.2790/95533

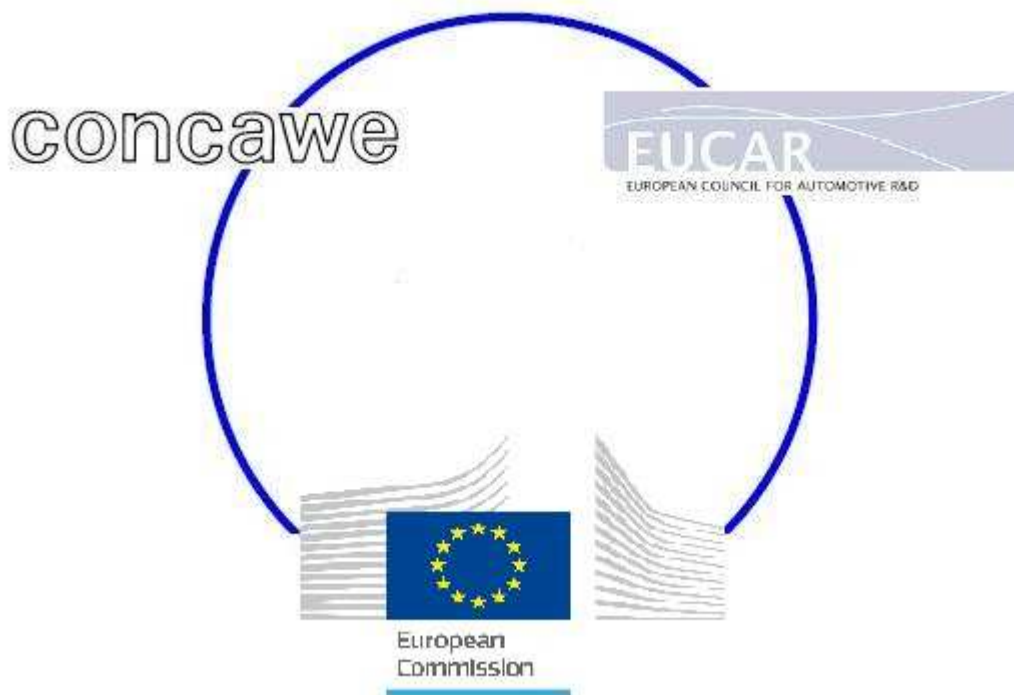
Luxembourg: Publications Office of the European Union, 2014

© European Union, 2014

Reproduction is authorised provided the source is acknowledged.

Printed in Italy

WELL-TO-WHEELS ANALYSIS OF FUTURE AUTOMOTIVE FUELS AND POWERTRAINS IN THE EUROPEAN CONTEXT



WELL-to-WHEELS (WTW) REPORT APPENDIX 2 - Reference List

Version 4, January 2014

This report is available as an ADOBE pdf file on the JRC/IET website at:

<http://iet.jrc.ec.europa.eu/about-jec>

Questions and remarks may be sent to:

infojec@jrc.ec.europa.eu

Notes on version number:

This is version 4a of this report replacing version 3c published in July 2011.

This Appendix was formerly included as part of the WTT Report, but has been moved to the WTW section and now includes all references from the WTW, WTT and TTW Reports.

Acknowledgments

This JEC Consortium study was carried out jointly by experts from the JRC (EU Commission's Joint Research Centre), EUCAR (the European Council for Automotive R&D), and CONCAWE (the oil companies' European association for environment, health and safety in refining and distribution), assisted by experts from Ludwig-Bölkow-Systemtechnik GmbH (LBST) and AVL List GmbH (AVL).

For full acknowledgement of individual contributors, please see the main WTW, WTT and TTW report texts.

References

References used in the study have been noted in the report texts and in the workbooks giving a detailed description of the individual pathways.

This tabulation provides a complete list of the references and sources used. References are listed in alphabetical order of their Short Names, with the right hand column showing where they are used.

Since most of the report text references appear in the WTT report, section numbers refer to that report unless specifically noted.

Short name	Full reference	WTT* report section or Pathway code
Agostini 2011	Agostini, A., Joint Research Centre (JRC), Petten, The Netherlands, 13 May 2011	OWCG
Agostini 2011 (2)	Agostini, A.; Giuntoli, J.; Edwards, R.; JRC-IET: Request for support on the identification of a methodology for accounting the avoided GHG emissions of manure digestion; November 9th 2011 JRC internal document	OWCG2
Agostini 2012	Agostini, A., Joint Research Centre (JRC), Petten, The Netherlands, 12 January 2012	OWCG2/OWCG 4/OWEL/OWHT
Agostini 2013	Carbon accounting of forest bioenergy - Conclusions and recommendations from a critical literature review. Agostini, Giuntoli, Boulamanti, EUR 25354, available on-line at http://iet.jrc.ec.europa.eu/bf-ca/publications	3.4.1
Ahluwalia 2009	Ahluwalia, R.K., Nuclear Engineering Division, Argonne National Laboratory (ANL); Hua, T.Q., ANL; Peng, J-K., ANL; Lasher, S., TIAX LLC ; McKenney, K., TIAX LLC; Sinha, J., TIAX LLC: Technical Assessment of Cryo-Compressed Hydrogen Storage Tank Systems for Automotive Applications; December 2009	GxLHx/WFHL1/EMEL1_LH1
Akula 2010	Prasada Rao Akula, Lakshmi Jandhyala, Frieder Herb, Akash Narayana, Development of Energy Management Strategies and Analysis with Standard Drive Cycles for Fuel Cell Electric Vehicles, SAE International, 2012-01-1609, 2012.	TTW 3.4.2.3
Al-mulali 2013	Al-mulali U, Gholipour Fereidouni H, JaniceYmLee J, at al., "Examining the bi-directional long run relationship between renewable energy consumption and GDP growth", Renewable and Sustainable Energy Reviews 22 (2013) 209-222	3.5.1
Angloher 1999	Angloher; J.; Dreier, Th.; Lehrstuhl für Energiewirtschaft und Anwendungstechnik Prof. Dr.-Ing. U. Wagner, TU München: Techniken und System zur Wasserstoffbereitstellung; Koordinationsstelle der Wasserstoff-Initiative Bayern (WIBA); Dezember 1999	GRHL1
ARB 2009	Prabhu, A.; Pham, Ch.; Glabe, A.; Duffy, J.; California Environmental Protection Agency, Air Resources Board (ARB): Detailed California-Modified GREET Pathway for Corn Ethanol; 2009	CRET2
Atrax 1999	Atrax Energi AB, DME from biomass, report for IEA-Alternative Motor Fuels Agreement, Feb. 1999	WxSD_ME_DE
Baumann 2012	Baumann, M, University of Stuttgart. Life Cycle Assessment of automotive Lithium-Ion batteries: State of the art and future developments. Battery+Storage, October 8th 2012.	WTT 2.4 WTW 2.1

WTW Appendix 2

Berglin 1999	Berglin, N.; Eriksson, H.; Berntsson, T.; Department of Heat and Power Technology, Chalmers University of Technology, Goteborg, Sweden: Performance evaluation of competing designs for efficient cogeneration from black liquor; prepared for the 2nd Biennial Johan Gullichsen Colloquium, Helsinki, Finland, September 9-11, 1999	WWEL
BOC 1997	Hydrogen Infrastructure Report; prepared for Ford Motor Company Dearborn, Michigan by Directed Technologies, Inc. Arlington, VA; Air Products and Chemical Allentown, PA; BOC Gases Murray Hill, NJ; The Electrolyser Corp., Ltd. Toronto CDN; Praxair, Inc. Tonawanda, New York; July 1997; Under Prime Contract No. DE-AC02-94CE50389; Purchase Order No. 47-2-R31148 to the U.S. Department of Energy, Office of Transportation Technologies	GPLCHb
Börjesson 2004	Berglund, M.; Börjesson, P., Energy and Environmental Systems Studies, Lund University, Lund, Sweden: Assessment of energy performance in the life-cycle of biogas production; September 2004	OWCG1//OWH T1/OWEL1
Börjesson 2005	Börjesson, P.; Berglund, M., Environmental and Energy Systems Studies, Dept. of Technology and Society Lund University, Lund, Sweden: Environmental system analysis of biogas systems - Part 1: fuel-cycle emissions; January 2005	OWCG1/OWHT 1/OWEL1
BMU 2004	Klima-Bündnis der europäischen Städte mit indigenen Völkern der Regenwälder/ Alianza del Clima e.V.: Erneuerbare Energien - Mit gutem Beispiel voran:16 Vorzeigeprojekte aus ganz Deutschland; Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) 2004. www.klimabuendnis.org	WxEH_HE
BP 2012	BP Statistical Review of World Energy, June 2012	3.1.1
Brandt 2011	Brandt, A., Upstream greenhouse gas (GHG) emissions from Canadian oil sands as a feedstock for European refineries, Department of Energy Resources Engineering, Stanford University, Stanford, January 2011	3.1.1
Breyer 2011	Breyer, Ch, Reiner Lemonine Institut gGmbH, Berlin, Germany.; Rieke, S.Solar Fuel GmbH, Stuttgart, Germany; Sterner, M., IWES, Kassel, Germany; Schmid, J., IWES, Kassel, Germany: Hybrid PV-Wind-Renewable Methane Power Plants - A Potential Cornerstone of Global Energy Supply; preprint to be published of the 26th European Photovoltaic Solar Energy Conference, 5-9 September 2011, Hamburg, Germany	RECG1
Brunner 2011	Brunner, T., BMW Group: BMW efficient dynamics hydrogen - prospects and challenges: extracts concerning cryo-compressed H2 storage & refueling; F-CELL, 27 September 2011	GxLHx/WFHL1/ EMEL1_LH1
Businessweek 2013	Business week, Iogen Focusing on Biofuels in Brazil After Selling Enzyme Unit, http://www.businessweek.com/news/2013-01-31/iogen-focusing-on-biofuels-in-brazil-after-selling-enzyme-unit . (accessed 10/07/2013)	3.4.11
CAPRI 2012	Kempen, M., University Bonn: CAPRI energy results; 01 March 2012	SBET/WTET1-5/BRET2/CRET 2/CRETus / LREB1/SOFA
CA LCFS	http://www.arb.ca.gov/fuels/lcfs/lcfs.htm (accessed 18/03/2013)	3.4.1
Chin 1991	Chin, F.Y., Department of Veterinary Services, Kuala Lumpur, Malaysia: Palm Kernel Cake (PKC) as a Supplement for Fattening and Dairy Cattle in Malaysia; 1991; http://www.fao.org/ag/AGP/agpc/doc/Proceedings/manado/chap25.htm	POFA
CONCAWE 2012	CONCAWE (2012) EU refinery energy systems and efficiency. Report No. 3/12. Brussels: CONCAWE	App 3

WTW Appendix 2

Coo 2011	Coo, Y.M.; Muhamad, H.; Hashim, Z.; Subramaniam, V.; Puah, C.W.; Tan, Y.: Determination of GHG Contributions By Subsystem In The Oil Palm Supply Chain Using The LCA Approach; Int J. Life Cycle Assess, 2011	POFA
Crutzen 2007	N ₂ O release from agro-biofuel production negates global warming reduction by replacing fossil fuels. P. J. Crutzen, A. R. Mosier, K. A. Smith, and W. Winiwarter. Atmos. Chem. Phys. Discuss., 7, 11191–11205, 2007. http://www.atmos-chem-phys-discuss.net/7/11191/2007/acpd-7-11191-2007.pdf	3.4.2
Da Silva 2010	Da Silva VP, van der Werf HMG, Spies A, Soares SR, 2010, "Variability in environmental impacts of Brazilian soybean according to crop production and transport scenarios", Journal of Environmental Management, Vol. 91, issue 9 (September 2010), pp.1831-1839	SYxx
De Camillis 2010	DE CAMILLIS, C., RAGGI, A. & PETTI, L. (2010) Developing a Life Cycle Inventory data set for cattle slaughtering. DASTA working paper. Universita' degli Studi "G. d'Annunzio". Pescara, Italy. (pp 5-6 on the allocation procedure)	TOxx
Dienhart 1999	Dienhart et. al. Analyse von Einsatzmoeglichkeiten..., DLR, Stuttgart 6/99	GRCG1/GRCG2 /GRLG1/WTET4 / GxEL/KOEL/ OWEL/WxEL/ GxEH_HE/GxHT /GRxH/ GRELx_CHx
DOE 2002	Fossil Energy International: An Energy Overview of Columbia; October 2002; http://www.fe.doe/international/colbover.html	KOxx/KOCHx_C Hx
Dreier 1999	Dreier, Th., Technische Universität (TU) München, Lehrstuhl für Energiewirtschaft und Anwendungstechnik Prof. Dr.-Ing. U. Wagner: Techniken und Systeme zur Wasserstoffbereitstellung; München, Dezember 1999	3.5.2 XXXX_CHx
Dreier 2000	Dreier, Th.: Ganzheitliche Systemanalyse und Potenziale biogener Kraftstoffe; IfE Schriftenreihe, Heft 42; herausgegeben von: Lehrstuhl für Energiewirtschaft und Anwendungstechnik (IfE), Technische Universität München, Ordinarius: Prof. Dr-Ing. Ulrich Wagner; 2000; ISBN 3 - 933283 - 18 - 3	SCET1 Prop table
EBB 2009	European Biodiesel Board (EBB), 21 July 2009. EBB data supplied by Robert Edwards, Joint Research Centre (JRC), Ispra, Italy, 21 July 2009	xxFA/ROFE
EC 2009	<i>EU Energy Trends to 2030, update 2009</i> http://ec.europa.eu/clima/policies/package/docs/trends_to_2030_update_2009_en.pdf	3.5.1
Edwards 2010	Indirect Land Use Change from increased biofuels demand. Comparison of models and results for marginal biofuels production from different feedstocks, R. Edwards, D. Mulligan, L. Marelli, JRC Scientific & Technical Report, EUR 24485 EN, 2010, ISBN 978-92-79-16391-3, DOI 10.2788/54137	3.4.1
EEA 2004	Assessing the potential impact of large-scale biomass production on agricultural land use, farmland habitats and biodiversity EEA/EAS/03/04	3.4.2
EFMA 2008	European Fertiliser Manufacturer Association (EFMA), 2008	SBET/WTET1-5/ / /LREB1/ROFA/ ROFE
EHN 2003	EHN: A 25 MW plant for straw combustion; 2003, www.ehn.es	WTET4
Ekbom 2003	T. Ekbom et al. 'Technical and commercial feasibility study of black liquor gasification with methanol/DME production as motor fuels for automotive	WWSD2/ME2/ DE2/WWCH3

WTW Appendix 2

	uses-BLGMF' Report for DG-TREN Altener programme Dec. 2003, download from www.nycomb.se	
Ekbom 2005	Ekbom, T. Berglin, N. and Logdberg, S. " Black liquor gasification with motor fuel production - BLGMF II - A techno-economic feasibility study on catalytic Fischer-Tropsch synthesis for synthetic diesel production in comparison with methanol and DME as transport fuels." Report P21384-1 for the Swedish Energy Agency. www.nykomb.se/pdf/BLGMF_II.pdf	WWSD2/ WWCH3
El Cerrejon 2002	El Cerrejon Norte Coal Mine, Colombia; http://www.mining-technology.com/projects	KOxx/KOCHx_C Hx
Ekbom 2003	T. Ekbom et al. 'Technical and commercial feasibility study of black liquor gasification with methanol/DME production as motor fuels for automotive uses-BLGMF' Report for DG-TREN Altener programme Dec. 2003, download from www.nycomb.se	3.4.11 WWEL
ENEA 2004	ENEA, Fraunhofer ISI, Riso National Laboratory: HYPOGEN Pre-feasibility Study; Brussels, 29 October 2004	KOEL
EP ILUC 2013	European Parliament 20-02-2013, Workshop on Sustainable Biofuels: addressing indirect land use change (ILUC); http://www.europarl.europa.eu/document/activities/cont/201302/20130214ATT61071/20130214ATT61071EN.pdf (accessed 10/07/2013)	3.4.1
ESU 1996	Hischier, R.; Martin, A.; Frischknecht, R., Eidgenössische Technische Hochschule, Gruppe Energie – Stoffe – Umwelt (ESU) Zürich, Schweiz: Ökoinventare von Energiesystemen, 3. Auflage; Bundesamt für Energiewirtschaft (BEW), Projekt- und Studienfonds der Elektrizitätswirtschaft; Juli 1996	Common process T1
ETSU 1996	Gover, M. P.; Collings, S. A.; Hitchcock, G. S.; Moon, D. P.; Wilkins, G. T.: Alternative Road Transport Fuels - A Preliminary Life-cycle Study for the UK, Volume 2; A study co-funded by the Department of Trade and Industry and the Department of Transport; ETSU, Harwell March 1996	GRMB1/LRLP1/ WTET1-5/ LREB1
EU 2009 (1)	Official Journal of the European Union, L140/16 and L140/88, 5.6.2009	3.4.1
EU 2009 (2)	Official Journal of the European Union, L151/19, 17.6.2010	3.4.1
EUROSTAT 2001	Hard Coal and Coke, Imports 1998 - 2000; Statistics in focus; Environment and Energy; Eurostat 2001	KOxx/KOCHx_C Hx
EUROSTAT 2013	Source: Eurostat online data code: nrg_105a, nrg_105m	3.5.1
FAPRI 2012	FAPRI 2012 US and World Agricultural Outlook http://www.fapri.iastate.edu/outlook/2012/	3.4.10
FAO 2010	FAO prodstat database 2010; http://faostat.fao.org/site/339/default.aspx	SCET1
FfE 1996	Bauer, H.; Schmittinger, C.: Prozeßkettenanalyse und Verfügbarkeit von Erdgas als Kraftstoff für Kraftfahrzeuge; Endbericht; Forschungsstelle für Energiewirtschaft (FfE) Oktober 1996	GRxx/GRxH/ GRELx_CHx
FfE 1998	Dreier, T.; Geiger, B.; Lehrstuhl für Energiewirtschaft und Kraftwerkstechnik, TU München (IfE); Saller, A., Forschungsstelle für Energiewirtschaft (FfE): Ganzheitliche Prozeßkettenanalyse für die Erzeugung und Anwendung von biogenen Kraftstoffen; Studie im Auftrag der Daimler Benz AG, Stuttgart und des Bayerischen Zentrums für Angewandte Energieforschung e.V. (ZAE); Mai 1998	SBET/ROFA/RO FE/WxCH2

WTW Appendix 2

Flessa 1998	H.Flessa et.al. Freisetzung und verbrauch der klimarelevanten spurengase N ₂ O und CH ₄ beim anbau nachwachsende rohstoffe. Deutsche Bundestiftung Umwelt, Osnabruek (1998)	WFxx/ WFELx_CHx																														
Foster Wheeler 1996	Foster Wheeler: Decarbonisation of Fossil Fuels; Report Nr. PH2/2; Prepared for the Executive Committee of the IEA Greenhouse Gas R&D Programme; March 1996	3.3 GxCH2/GxCH2 C																														
GEMIS	GEMIS (Global Emission Model of Integrated Systems http://www.oeko-institut.org/service/gemis/index.htm ; <table border="1"> <thead> <tr> <th>Year</th> <th>Versions</th> <th>Pathways</th> </tr> </thead> <tbody> <tr> <td>2000</td> <td>4.0</td> <td>WDEL/RESD</td> </tr> <tr> <td>2001</td> <td>4.0.7.0</td> <td>CRETus</td> </tr> <tr> <td>2002</td> <td>4.1.3.2</td> <td>GMCG1/GPCG1a-b/GRCG1-1c/GRCG2/GRLG1/SGCG1/ WTET2BRET2/CRET2/WW-WFET1/ KOxx/KOELx_CHx/GPME_DE/WxSDME_DE/ GxEL/WxEL/NUEL/COHT/GxHT/WxHT/GxEH_HE/WxEH_HE/ GxxHx/GxELx_CHx</td> </tr> <tr> <td>2004</td> <td>4.2.1.0</td> <td>OWEL/NUEL</td> </tr> <tr> <td>2005</td> <td>4.3.0.0</td> <td>WCG5/WTET3/STET1/KOSD_ME_DE/ WxEL/NUEL/COHT/GxHT/OWHT/OWEL/GxEH_HE/WxEH_HE</td> </tr> <tr> <td>2007</td> <td>4.4.2.0</td> <td>OWCG1/OWCG2/OWCG4/WTET3/OWHT1/OWEL1/NUEL/WxHT</td> </tr> <tr> <td>2009</td> <td>4.5.0.0</td> <td>NUEL</td> </tr> <tr> <td>2010</td> <td>4.6.0.0</td> <td>NUEL</td> </tr> <tr> <td>2011</td> <td>4.7.0.0</td> <td>FOEL /OWEL/GxEL/NUEL/GxHT/GxEH_HE</td> </tr> </tbody> </table>	Year	Versions	Pathways	2000	4.0	WDEL/RESD	2001	4.0.7.0	CRETus	2002	4.1.3.2	GMCG1/GPCG1a-b/GRCG1-1c/GRCG2/GRLG1/SGCG1/ WTET2BRET2/CRET2/WW-WFET1/ KOxx/KOELx_CHx/GPME_DE/WxSDME_DE/ GxEL/WxEL/NUEL/COHT/GxHT/WxHT/GxEH_HE/WxEH_HE/ GxxHx/GxELx_CHx	2004	4.2.1.0	OWEL/NUEL	2005	4.3.0.0	WCG5/WTET3/STET1/KOSD_ME_DE/ WxEL/NUEL/COHT/GxHT/OWHT/OWEL/GxEH_HE/WxEH_HE	2007	4.4.2.0	OWCG1/OWCG2/OWCG4/WTET3/OWHT1/OWEL1/NUEL/WxHT	2009	4.5.0.0	NUEL	2010	4.6.0.0	NUEL	2011	4.7.0.0	FOEL /OWEL/GxEL/NUEL/GxHT/GxEH_HE	
Year	Versions	Pathways																														
2000	4.0	WDEL/RESD																														
2001	4.0.7.0	CRETus																														
2002	4.1.3.2	GMCG1/GPCG1a-b/GRCG1-1c/GRCG2/GRLG1/SGCG1/ WTET2BRET2/CRET2/WW-WFET1/ KOxx/KOELx_CHx/GPME_DE/WxSDME_DE/ GxEL/WxEL/NUEL/COHT/GxHT/WxHT/GxEH_HE/WxEH_HE/ GxxHx/GxELx_CHx																														
2004	4.2.1.0	OWEL/NUEL																														
2005	4.3.0.0	WCG5/WTET3/STET1/KOSD_ME_DE/ WxEL/NUEL/COHT/GxHT/OWHT/OWEL/GxEH_HE/WxEH_HE																														
2007	4.4.2.0	OWCG1/OWCG2/OWCG4/WTET3/OWHT1/OWEL1/NUEL/WxHT																														
2009	4.5.0.0	NUEL																														
2010	4.6.0.0	NUEL																														
2011	4.7.0.0	FOEL /OWEL/GxEL/NUEL/GxHT/GxEH_HE																														
GEMIS 2000/ GEMIS 4.0	GEMIS 4.0 Database and Calculation Model of the Oeko-Institut, Darmstadt	WDEL/RESD																														
Germer 2008	Germer, J Sauerborn, J, Estimation of the impact of oil palm plantation establishment on greenhouse gas balance, Environment, Development and Sustainability Environ. Dev. Sustainability. Vol. 10, no. 6, pp. 697-716. Dec 2008	3.4.10																														
GHW 2001	Brand, R., A., Gesellschaft für Hochleistungselektrolyse zur Wasserstofferzeugung mbH (GHG); personal communication 2001	3.5.2 RExx/ XXXX_CHx																														
GM 2002	GM Well-to-Wheels Analysis of Energy Use and Greenhouse Gas Emissions of Advanced Fuels/Vehicles Systems. A European study. LBST, September 2002	WTT 1. and WTW 1.																														
GHW 2004	Brand, R., A., Gesellschaft für Hochleistungselektrolyse zur Wasserstofferzeugung mbH (GHW): Introduction of an Efficient, Innovative Pressure Module Electrolyser (PME) of High Capacity and Low Cost, for the Sustainable Fuel and Electricity Storage Market; HYFORUM 2004, Beijing, China, May 2004	3.5.2 RExx/ XXXX_CHx																														
Gogolek 2012	Gogolek, P., Experimental Studies on Methane Emissions from Associated Gas Flares, Natural Resources Canada, Canmet ENERGY, Ottawa, 2012	3.1.1																														
Grass 2001	Graß, R., Universität Kassel, Institut für Nutzpflanzenkunde: Produkton von	OWCG5																														

WTW Appendix 2

	Energiepflanzen in der ökologischen Kreislaufwirtschaft; Internationales Biogas & Kompetenzzentrum (IBBK) Tagung, 2001	
Gray 2001-2005	Gray, D.; Tomlinson, G.; Mitretek Systems (MTS): Coproduction: A Green Coal Technology; MP 2001-28 Mitretek; Technical Report for the U.S. Department of Energy (DOE) under a subcontract with Concurrent Technology Corporation (CTC), contract number DE-AM26-99FT40465; March 2001 Gray, D., personal communication, 21 July 2005	3.3 KOSD_ME_DE
Greenfield 2002	Landinger, H., GreenField Deutschland GmbH, Türkenfeld, Germany, personal communication November 2002	xxCG
GREET 2011	Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) model; Argonne National Laboratory, Transportation Technology R & D Center; version 1, 2011	CRET2/CRETus
Haldor Topsoe 1998	Haldor Topsoe, quotation steam reformer 320 Nm ³ /h and 560 Nm ³ /h, 17 December 1998	GxCH1
Haldor Topsoe 1998	Haldor Topsoe, quotation steam reformer 320 Nm ³ /h and 560 Nm ³ /h, 17 December 1998	GxCH1
Hamelinck 2002	C. N. Hamelinck, R. Stuurs and A.P.C. Faaij, Long distance bioenergy logistics – preliminary results. Proc. 12 th European Biomass Conference, Amsterdam, June 2002.	WFxx
Hamelinck 2013	C Hamelinck: "Biofuels and food security, risks and opportunities", Utrecht 2013 http://www.ecofys.com/files/files/ecofys-2013-biofuels-and-food-security.pdf	WTW 3.4
Han 2011	Han, J., A. Elgowainy, I. Palou-Rivera, J.B. Dunn, and M.Q. Wang, 2011, Well-to-Wheels Analysis of Fast Pyrolysis Pathways with GREET, Center for Transportation Research, Argonne National Laboratory, ANL/ESD/11-8, Nov.	3.4.10.2
Hanjin 2000	Hanjin Ras Laffan's Maiden Voyage; Linkage September 2000; http://www.rasgas.com/Content/Linkage/Linkage2000/Sept2000/sept2000.htm	GRCG1-1c/GRCG2/GRLG1/GREL/GRHT/GREH/GRxH/GRELx_CHx
Hansen 2001	Hansen, J.; Mikkelsen, S., E.; Haldor Topsoe, DME as a Transportation Fuel; A project carried out for the Danish Road Safety & Transport Agency and The Danish Environmental Protection Agency; Lynby, July 2001	GPME_DE/GRME_DE
Hartmann 1995	H. Hartmann, Energie aus biomasse, Part IX of Renewable Energy Series, pub. VDI-GET 1995	WFxx/ WFELx_CHx
Heffer 2009	Heffer, P., International Fertilizer Industry Association (IFA), Paris, France: Assessment of Fertilizer Use by Crop at the Global Level 2006/07 - 2007/08; April 2009 http://www.fertilizer.org/ifa/Home-Page/LIBRARY/Publication-database.html/Assessment-of-Fertilizer-Use-by-Crop-at-the-Global-Level-2006-07-2007-08.html2	SCET1
Hydrogen Systems 2000	Product Information IMET Hydrogen Generators; Hydrogen Systems N.V., Turnhout, Belgium 2000	3.5.2 RExx/

WTW Appendix 2

		XXXX_CHx
IDEAM 2001	Executive Summary of Columbia's First National Communication to the United Nations Framework Convention on Climate Change	KOxx/KOCHx_C Hx
IEA 2000	Coal production and extra EU imports in the year 1999, Source: Oil, Gas, Coal & Electricity, IEA Statistics 2000;	KOxx/KOCHx_C Hx
IEA 2005	"Low Emission Fuels- the impact of CO ₂ Capture and Storage on selected pathways" A report produced for the IEA Greenhouse Gas R&D programme, 2005	GRSD1C/ /GRDE1C 3.6
IEA 2011	Energy Statistics of OECD Countries, International Energy Agency, Paris, 2011; Energy Statistics of Non-OECD Countries, International Energy Agency, Paris, 2011; Electricity Information, International Energy Agency, Paris, 2011	3.5.1
IEA 2012	Oil Information 2012 with 2011 data, International Energy Agency (IEA), Paris, France, 2012	3.1.1
IEA WEO 2012	World Energy Outlook 2012, International Energy Agency (IEA), Paris, France, 2012	3.1.1
IFA 2010	International fertilizer Association: fertilizer use by crop 2006/7 http://www.fertilizer.org/ifa/Home-Page/STATISTICS accessed June 2010; FAOSTAT production data 2007	POFA
IFEU 2006	Reinhardt, G.; Gärtner, S., O.; Helms, H.; Rettenmaier, N.; Institute for Energy and Environmental Research Heidelberg GmbH (IFEU): An Assessment of Energy and Greenhouse Gases of NExBTL; By order of the Neste Oil Corporation, Porvoo, Finland; Final Report; Heidelberg, June 2006	xxHY
ILCD 2010	EUR 24380 EN – 2010; available from http://lct.jrc.ec.europa.eu	WTT.4.a
IHS CERA 2012	Oil Sands, Greenhouse Gases, and US Oil Supply; Getting the Numbers Right—2012 Update; IHS CERA report and appendices November 2012	3.1.1
Indexmundi 2013 (1)	Indexmundi, EU-27 Soybean Meal Imports by Year, http://www.indexmundi.com/agriculture/?country=eu&commodity=soybean-meal&graph=imports , (accessed 09/07/2013)	3.4.10
Indexmundi 2013 (2)	Indexmundi, EU-27 Soybean Oil Domestic Consumption by Year, http://www.indexmundi.com/agriculture/?country=eu&commodity=soybean-oil&graph=domestic-consumption . Indexmundi, EU-27 Soybean Oil Imports by Year, http://www.indexmundi.com/agriculture/?country=eu&commodity=soybean-oil&graph=imports , (accessed 09/07/2013)	3.4.10
logen 2003	logen plant data supplied by Groves, A., Shell: evaluation of ethanol from lignocellulose; July 2003	STET1
IPPC 2006	2006 IPCC Guidelines for National Greenhouse Gas Inventories. Published by the Institute for Global Environmental Strategies (IGES) for the IPCC, ISBN 4-88788-032-4	SYFA/OWCG4-5/WW-WFxx/ WFELx_CHx
IPCC 2006 (2)	Paustian, K., et al: 2006 IPCC Guidelines for National Greenhouse Gas Inventories; IPCC National Greenhouse Inventories Programme; published by the Institute for Global Environmental Strategies (IGES), Hayama, Japan on behalf of the Intergovernmental Panel on Climate Change (IPCC), 2006; http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_11_Ch11_N2O&CO2.pdf	OWCG4/OWCG5/WW-WFET1/WxSD_ME_DE/WxEL/WxHT/WxEH_H E
IPCC 2006 (1)	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4. Agriculture, Forestry and Other Land use, Ed. Eggleston, S; Buendia, L; Miwa, K and Tanabe, K. http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html (accessed 18/03/2013)	3.4.1
IPPC 2007 (4)	2007 IPCC Fourth Assessment Report (AR4): the activities of the Working Group 1 (WG1) and Chapter 2 of that report (Changes in Atmospheric Constituents and Radiative Forcing) http://www.ipcc.ch/pdf/assessment-	TTW 4.3.3

WTW Appendix 2

	report/ar4/wg1/ar4-wg1-chapter2.pdf	
IPPC 2007 (3)	IPCC Fourth Assessment Report, For GHG coefficients, see Technical Summary, Table TS-2, Page 33. http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-ts.pdf	2.6.1
IPPC 2007 (2)	S Solomon, IPCC et al.: Climate Change 2007 - The Physical Science Basis; 200. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor and H.L. Miller (eds.). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA; http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_Ch02.pdf	3.4.1
IPPC 2007 (1)	IPCC 4 th Assessment Report: Climate Change 2007. Working Group III: Mitigation of Climate Change. http://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch3s3-2-1-6.html (accessed 18/03/2013)	3.4.1
ISO 2006 (1)	ISO 14040 "Environmental management – Life cycle assessment – Principles and framework" http://www.iso.org/iso/catalogue_detail.htm?csnumber=37456	WTW 2.1
ISO 2006 (2)	ISO 14044 "Environmental management – Life cycle assessment – Requirements and guidelines" http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=38498	WTW 2.1
JRC 2008	JRC-IPTS/IES: Biofuels in the European context: Facts and Uncertainties. JRC44464, 2008.	
JRC 2013	Assessing GHG default emissions from biofuels in EU legislation. Review of the input database to calculate 'Default GHG emissions', following expert consultation, 22–23 November 2011, Ispra (Italy). Final Draft 19 February 2013	3.5.1 xxEL/xxEH/REC G1/RES D Common processes EM/EDH/EDM/EDL
Kaltschmitt 1997	Kaltschmitt, M. and Reinhardt, G.A., "Nachwachsende Energieträger: Grundlagen, Verfahren, oekologisches Bilanzierung" Vieweg 1997 ISBN 3-528-06778-0	SBET/WTET1-5/BRET2/CRET2/CRETus/STET1/LREB1 Seeding material n-Hexane
Kaltschmitt 2001	Kaltschmitt, M; Hartmann, H. (Hrsg.): Energie aus Biomasse - Grundlagen, Techniken und Verfahren; Springer-Verlag Berlin Heidelberg New York; 2001; ISBN 3-540-64853-4	BRET2/SCET1 Prop table
Kampitsch 2012	Kampitsch, M., BMW: BMW – cryo-compressed hydrogen refueling; WHEC 2012, Toronto, Canada	GxLHx/WFHL1/EMEL1_LH1
Katofsky 1993	Katofsky, R. E.: The Production of Fluid Fuels from Biomass; PU/CEES Report No. 279; The Center for Energy and Environmental Studies; Princeton University; June 1993	3.3, 3.4.11 KOSD_ME_DE/WxSD_ME_DE
Kraenzlein 2009	T. Kraenzlein, "Economic monitoring of fossil fuel energy use in EU agriculture", Forschungsanstalt Agroscope Reckenholz-Taenikon ART, Switzerland, Dec. 2009.	3.4.1

WTW Appendix 2

KTBL, 2006	Kuratorium für Technik und Bauwesen in der Landwirtschaft e.V. (KTBL); Leibniz-Institut für Agrartechnik Potsdam-Bornim e.V. (ATB): Energiepflanzen; KTBL, Darmstadt, 2006; ISBN 13: 978-3-939371-21-2	OWCG4
Larsen 1998	Larsen, H., H., Haldor Topsoe A/S, Lyngby, Denmark: The 2,400 MTPD Methanol Plant at Tjeldbergodden; presented to 1998 World Methanol Conference, Frankfurt, Germany, December 8-10; 1998; prepared by Anders Gedde-Dahl and Karl Jorgen Kristiansen, Statoil a/s, Tjeldbergodden, Norway and Helge Holm Larson.	GRMB1/GPME_DE/GRME_DE/xFA/GRCH3
LBST 1997/1	Zittel, W., Ludwig-Bölkow-Systemtechnik GmbH, Ottobrunn: Reisebericht über die Meßkampagne von RAO Gazprom, Ruhrgas und VNIIGaz auf den Gasförder- und Aufbereitungsanlagen der Jamburggazduibitscha im August 1997 und Vorschläge zur Verminderung der Methanemissionen aus der Gasförderung sowie Gutachten über die sachliche Richtigkeit des Endberichts der Meßkampagne mit dem Titel "Abschätzung der Methanfreisetzung bei der Gasförderung der RAO Gazprom in Westsibirien; August 1997	GPxx/GPxHx/GPELx_CHx
LBST 1997/2	Zittel, W., Ludwig-Bölkow-Systemtechnik GmbH, Ottobrunn: Untersuchung zum Kenntnisstand über Methanemissionen beim Export von Erdgas aus Rußland nach Deutschland; Studie im Auftrag der Ruhrgas AG, Endbericht; März 1997	GPxx/GPxHx/GPELx_CHx
LBST 2001	Stiller, Chr.: Machbarkeitsuntersuchung der Erzeugung von Wasserstoff in off-shore-Windparks und Auslegung einer geeigneten Wasserstoffverflüssigungsanlage; Diplomarbeit an der Technischen Universität München, Lehrstuhl für Thermodynamik; Ludwig-Bölkow-Systemtechnik GmbH, November 2001	xxLH/ EMEL1_LH1
LBST 2002	LBST, GM well-to-wheels analysis of energy use and greenhouse gas emissions of advanced fuel/vehicle systems- a European study; report for General Motors, BP, ExxonMobil, Shell and TotalFinaElf, Sept. 2002 http://www.lbst.de/gm-wtw	3.4.11
Le Breton 2002	Le Breton, TotalFinaElf; Air Liquide; personal communication, May 2002	xxHL/ EMEL1_LH1
Liebner 2004	Liebner, W.; Koempel, H.; Wagner, M.; Lurgi AG, Frankfurt am Main: Gas-To-Chemicals-Technologien von Lurgi: von Ergas/Synthesegas zu hochwertigen Produkten; 55. Berg- und Hüttenmännischer Tag, Freiberg 16./17. Juni 2004	RESD
Linde 2001	Reijerkerk, C., J., J., Linde Gas AG, Market Development & Global Key Accounts, Engineering (SDE), Unterschleissheim, Germany: Hydrogen Filling Stations Commercialisation; project carried out within the frame of an integrated International Master Programme in Technology and Management at the University of Hertfordshire in conjunction with Fachhochschule Hamburg; 14th September 2001	GPLCHb
Liski 2005	Liski, J., Palosuo, T., Peltoniemi, M., Sievaenen, R., Carbon and decomposition model Yasso for forest soils. Ecological Modelling 189 (2005), pp.168–182.	3.4.11
Liu 2013	Shiwei Liu.; Zhiping Wang, Shitao Yu and Congxia Xie, Transesterification Of Waste Oil To Biodiesel Using Brønsted Acid Ionic Liquid As Catalyst. Bull. Chem. Soc. Ethiop. 2013, 27(2), 289-294. http://dx.doi.org/10.4314/bcse.v27i2.14	WOFA3a
Lonza 2011	L Lonza, H Hass, H Maas, A Reid, K. Rose: EU renewable energy targets in 2020: Analysis of scenarios for transport EUR 24770 EN; ISBN 978-92-79-19792-5; ISSN 1018-5593; DOI 10.2788/74948 http://iet.jrc.ec.europa.eu/about-jec	WTW 2.2
LowCVP 2004	Well-to-Wheel Evaluation for Production of Ethanol from Wheat A Report by the LowCVP Fuels Working Group, WTW Sub-Group FWG-P-04-024. http://www.lowcvp.org.uk/uploaded/documents/FWG-P-04-	WTET1-5/BRET2/CRET

WTW Appendix 2

	22_WTW__Ethanol_from_Wheat_40916.pdf ²	2
Lywood, 2010	Lywood, W., ENSUS plc., e-mail to Robert Edwards, Joint Research Centre (JRC), Ispra, 03/12/2010	WTET1-5/BRET2
Macedo 2004	Assessment of GHG emissions in the production and use of fuel ethanol in Brasil" I.de Carvalho Macedo et al. Government of the State of Sao Paulo, Brazil, 2004. www.unica.com.br	SCET1
Macedo 2008	I. C. Macedo, J. E.A. Seabra, and J. E.A.R. Silva, Green house gases emissions in the production and use of ethanol from sugarcane in Brazil: The 2005/2006 averages and a prediction for 2020, Biomass and Bioenergy, Volume 32, Issue 7, July 2008, Pages 582-595	3.4.9 SCET1
MAN B&W, 2003	MAN B&W; Engine data S70 MC; http://www.manbw.de/web/engines/TwoStrokeLowSpeedPropEngines.asp?model=S70MC Update 2003-04-02	Common process T3g
Masake 1997	Masake, S.; Osaka Gas; Kuwabara, S.; Tokyo Gas; Life Cycle Analysis of Natural Gas in Japan; Fax from Osaka Gas; 3/1997	GRxx/GRxH/ GRELx_CHx
McLean 2009	MacLean, H., L; Spatari, S.: The contribution of enzymes and process chemicals to the life cycle of ethanol; Environ. Res. Lett. 4 (2009) 014001 (10pp)	BRET2/CRET2/ CRETus
Messer 1998	Kesten, M., Messer Gruppe, Krefeld, Germany, personal communication November 1998	GRCG2/GRLG1
Miettinen 2012	Extent of industrial plantations in Southeast Asian Peatlands in 2010 with analysis of historical expansion and future projections. J. Miettinen et al. Global Change Biology Bioenergy (2012) doi: 0.1111/j.1757-1707.2012.01172.x	3.4.1 3.4.10
MHI 2000	MHI completes last LNG carrier for Qatar project; Sea-Japan, No. 282 Aug. – Sept. 2000; Japan Ship Exporter’s Association (JSEA), Tokyo;	GRCG1-1C
MIT 2008	On the Road in 2035. Reducing Transportation’s Petroleum Consumption and GHG Emissions Laboratory for Energy and the Environment Massachusetts Institute of Technology July 2008, Report No. LFEE 2008-05 RP	WTW 2.1
Mitsubishi 2000	Mitsubishi Heavy Industries: MHI completes last LNG-carrier for Qatar project; SEA-Japan; No. 282 Aug. - Sept. 2000; Japans Ship Exporters Association	GRCG1-1c/GRCG2/GRLG1/GREL/GRHT/GREH_HE/ /GRxH/ GRELx_CHx
Moore 1996	Moore, R., B., Air Products & Chemicals, Allentown, PA, USA: R&D of a Direct Hydrogen-Fueled Proton-Exchange-Membrane (PEM) fuel cell system for Transportation Applications; Section 2, Ford Hydrogen Infrastructure Study - Summary Report, prepared for the Ford Motor Company, under Prime Contract No. DE-AC02-94CE50389, Purchase Order No. 47-2-R31148 to the U.S. Department of Energy - Office of Transportation Technologies; ubcontract No. 47-2-R31155; 13 March 1996	GRCH3
Murach 2003	D. Murach, Fachhochschule Eberswalde, e-mail to J-C Griesman, Renault, 27.08.2003	WFxx/ WFELx_CHx
Nexant 2003	Ultra Clean Fuels Life Cycle Assessment Final Report. Co-operative Agreement DE-FC26-01NT41098, Submitted To: United States Department of Energy. Submitted By Nexant & ConocoPhillips, November 2003	3.2.6

WTW Appendix 2

NHEG 1992	Andreassen, K. et al., Norsk Hydro a.s., Bünger et al., Ludwig-Bölkow-Systemtechnik GmbH: Norwegian Hydro Energy in Germany (NHEG) - Final report; Study on the behalf of the "Bundesministerium für Forschung und Technologie" Germany, the Commission of the European Communities, "Det kongelige olije- og energidepartement" Norwa, Norsk Hydro a.s. and Ludwig-Bölkow-Systemtechnik GmbH; Hrsg. Norsk Hydro and Ludwig-Bölkow-Systemtechnik GmbH May 1992; Work Package 400: Systems Analysis: Case I.	GRCG1-1c/GRCG2/GRL G1/GREL/GRHT /GREH_HE/ /GRxH/ GRELx_CHx
NOAA 2011	Global Gas Flaring Estimates, Global/Country Results 1994-2010, spreadsheet BCM_Global_20110223.xlsx, National Oceanic and Atmospheric Administration (NOAA), National Geophysical Data Center (NGDC), February 2011, http://www.ngdc.noaa.gov/dmsp/interest/gas_flares.html	3.1.1
NRC 1998	Nutrient Requirements for Swine. 10 th revised ed. ,pub. Nat. Acad. Sciences, Washington 2000.	SBET
NRC 2004	"Economic, financial, social analysis and public policies for biodiesel", Phase 1, report for Natural Resources Canada, Nov. 2004	3.4.10
OECD Stat. 2013	OECD.StatExtracts, OECD-FAO Agricultural Outlook 2013-2022 (accessed 04/07/2013)	3.4.3
OGP 2011	International Association of Oil & gas Producers (OGP), Environmental Performance Indicators 2011 data, Report No. 2011e, October 2012	3.1.1
Öko Institut 1999	The EM Generic Database, updated March 1999; Öko-Institut 1999, Page 25, table 31	WxEL
Oeko-inventar 1996	Oeko inventor database 1996	Common processes T2, 3a/b/c/e
Omar 2010	Omar W., Aziz N.A., Mohammed A.T., Harun M.H. and Din A. K. 2010. "Mapping of palm oil cultivation on peatland in Malaysia". MPOB Information Series no. 529, ISSN 1511-7871, June 2010, MPOB TT No. 473.	3.4.10
Page 2011	"Review of peat surface greenhouse gas emissions from oil palm plantations in Southeast Asia" Page S.E., Morrison R., Malins C., Hooijer A., Rieley J.O., and Jauhiainen j,... ICCT White Paper 15, Washington: International Council on Clean Transportation.	3.4.1 3.4.10
Perks 2012	Perks, J., AEA Technology plc., Harwell, United Kingdom, et al.: Climate impact of potential shale gas production in the EU; Report for European Commission DG CLIMA; 30 July 2012	3.2.2 SGCG1
Proton Energy 2000	Proton Energy Systems Inc., Rocky Hill, USA: Hogen Series Hydrogen Generator System Specification; June 2000, www.protonenergy.com	RExx/ XXXX_CHx
PWC 2001	PricewaterhouseCoopers, "Shell Middle Distillate Synthesis (SMDS): Application of a Life Cycle Approach to Assess the Environmental Inputs and Outputs, and Associated Environmental Impacts, of Production and Use of Distillates from a Complex Refinery and SMDS Route; Final Technical Report; prepared for Shell International Gas Ltd., London;" carried out by Global Environmental Services (GES) which comprises part of the Assurance and Business Advisory Services (ABAS) of PricewaterhouseCoopers, London, United Kingdom; September 2001	3.2.6
Quack 2001/1	Quack, H., Technische Universität Dresden, Germany: Conceptual Design of a high efficiency large capacity hydrogen liquefier; Cryogenic Engineering Conference, Madison, Wisconsin, USA, July 16-20, 2001; http://www.cec-icmc.org	xxLH/ EMEL1_LH1

WTW Appendix 2

Quack 2001/2	Quack, H., Technische Universität Dresden, Germany: Die Schlüsselrolle der Kryotechnik in der Wasserstoff-Energiewirtschaft; Wissenschaftliche Zeitschrift der Technischen Universität Dresden, 50 (2001) Heft 5/6	xxLH/ EMEL1_LH1
Reason 2013	Reason Foundation "The limits of Wind Power" Policy Study 403, February 2013	3.5.1
Repsol 2003	Baro, J., Repsol; personal communication 26 June 2003	WTET4
Rous 2008	Rous, J-F., Sofiprotéol, Paris, France; personal communication 23 October 2008	ROFA/ROFE
Rubin 2004	Edward S. Rubin; Annand B. Rao; Chao Chen; Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, PA, USA: Comparative assessment of fossil fuel power plants with CO2 capture and storage; Proceedings of 7th International Conference on Greenhouse Gas Control Technologies (GHGT-7), Vancouver, Canada, September 5-9, 2004	GRCG1C
Rubin 2005	Rubin, E., personal communication, 25 July 2005	GxEL
SBH 2000	Stichting Bos en Hout, Wageningen, NL and AFOCEL, Nangis, France, EU energy policy impacts on the forest - based industries: a modelling analysis of the influence of the EC White Paper on renewable energy sources on the wood supply to the European forest-based industries. Consultant's report for DG Enterprise, August 2000	3.4.11
Scheuermann 2003	Scheuermann, A.; Thrän, D.; Scholwin, F.; Dilger, M.; Falkenberg, D.; Nill, M.; Witt, J.; Institut für Energetik & Umwelt gGmbH (IE), Leipzig: Monitoring zur Wirkung der Biomasseverordnung auf Basis des Erneuerbare-Energien-Gesetzes (EEG); Im Auftrag des Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) und des Umweltbundesamtes (UBA); Endbericht, 17. Dezember 2003	WxEH_HE
Schmidt 2007	Schmidt, J.: Life cycle assessment of rapeseed oil and palm oil; Part 3: Life cycle inventory of rapeseed oil and palm oil; Ph.D. thesis, University of Aalborg, Denmark, 2007	POFA
Schulz 2004	Schulz, W.: Untersuchung zur Aufbereitung von Biogas zur Erweiterung der Nutzungsmöglichkeiten, Aktualisierung einer im Juni 2003 vorgelegten gleichnamigen von Wolfgang Schulz, Maren Hille unter Mitarbeit von Wolfgang Tentscher durchgeführten Untersuchung; im Auftrag der Bremer Energie-KonsensGmbH, Bremen; Bremer Energieinstitut, Institut an der Universität Bremen, August 2004	OWCG1/OWCG 2/OWCG4/OWC G5/OWEL/OWH T
Scurlock 1999	J.M.O. Scurlock, Miscanthus: a review of European experience with a novel energy crop. ORNL/TM-13732, 1999. http://bioenergy.ornl.gov/pubs/grass_pubs.html	WFxx
Shapouri 1995	Shapouri, H.; Duffield; J., A.; Graboski, M., S.; U.S. Department of Agriculture, Economic Research Service, Office of Energy: Estimating the Net Energy Balance of Corn Ethanol; Agricultural Economic Report No. 721; Washington, DC, 20005-4788; July 1995	CRET2
Shell 1990	Eilers, J.; Sie, S., T.; Koninklijke/ Shell-Laboratorium, Amsterdam (Shell Research B.V.), The Netherlands; Posthuma, S., A.; Shell International Petroleum, The Hague, The Netherlands: The Shell Middle Distillate Synthesis Process (SMDS); Catalysis Letters 7 (1990) 253-270	WWSD2
Shell 2001	2000 Highlights; Shell Petroleum Development Company of Nigeria Ltd (SPDC), verified by KPMG Lagos and KPMG Oslo; 25 April 2001	COD1/COG1/C OHT
Shell 2002	Cadu, J., Shell International Petroleum Company Ltd., personal communication 18 April 2002 (e-mail: Jean.Cadu@shell.com):	GMxx/GPxx/GR xx/GxxHx/GxELx CHx
Shell 2007	Advice from Shell on GTL plant efficiency based on commercial experience	GRSD1
Shonnard 2007	Shonnard, D.; Koers, K.; Michigan Technology University, Department of	ROHY1b

WTW Appendix 2

	Chemical Engineering: A Life Cycle Assessment of Ecofining Process for Producing Green Diesel and Comparison to Biodiesel: CONCAWE Study Assumptions; Study Conducted for UOP LLC, Des Plaines, IL, USA; November 03, 2007	
Socolow 2011	Socolow, R, et al., American Physical Society (APS): Direct Air Capture of CO2 with Chemicals: A Technology Assessment for the APS Panel on Public Affairs; June 1, 2011	RECG1/RESD
Specht 1996	Specht, M.; Staiss, F.; Bandi, A.; Weimer, T.; Zentrum für Sonnenenergie- und Wasserstoff-Forschung (ZSW), Stuttgart: Comparison of the Renewable Transportation Fuels Liquid Hydrogen and Methanol with Gasoline - Energetic and Economic Aspects; Proceedings of the 11th World Hydrogen Energy Conference, Stuttgart, Germany; June 1996	RESD
Stuart Energy 2005	Stuart Energy: Hydrogen generation; 2005; http://www.stuartenergy.com/main_our_products.html	3.5.2 RExx/ XXXX_CHx
SWM 2006	Stadtwerke München (SWM), 2006; http://www.swm.de	GxEH_HE
Sydcraft, 2001	Stahl, K., Sydcraft AB, Malmoe: Vaenamo demonstration plant: the demonstration program; 2001	WxEL
Sydcraft 2002	Stahl: Värnamo Demonstration Plant; The Demonstration Programme; Sydcraft 2002	WxCH2
TAB 1999	Nitsch, J.; Pehnt, M.; Dienhart, H.; Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Schwerpunkt Energietechnik, Institut für Technische Thermodynamik, Abteilung Systemanalyse und Technikbewertung: Analyse von Einsatzmöglichkeiten und Rahmenbedingungen verschiedener Brennstoffzellensysteme in Industrie und zentraler öffentlicher Versorgung; 1- Entwurf; Gutachten im Auftrag des Büros für Technikfolgen-Abschätzung beim Deutschen Bundestag (TAB); Stuttgart, Juni 1999	3.5.1 GxEH_HE
Teoh 2004	Teoh Cheng Hai, Eco Partners, Kuala Lumpur, Malaysia: Selling the green palm oil advantage; Oil Palm Industry Economic Journal (VOL 4(1)/2004)	POFA
Theobserver 2013	The observer, Announcement set for Tuesday at Woodland Biofuels in Sarnia, http://www.theobserver.ca/2013/06/24/announcement-set-for-tuesday-at-woodland-biofuels-in-sarnia . (accessed 10/07/2013)	3.4.11
Thewes 2010	M. Thewes et al.: Future Fuels for Modern DISI Engines, in proceedings of the 19th Aachen Colloquium 2010, October 2010, Aachen.	TTW
Tijmensen 2002	M.J.A. Tijmensen et. al., Exploration of the possibilities for production of Fischer-Tropsch liquids and power via biomass gasification. July 2008	3.4.11 WxSD_ME_DE
Tomforde 2004	Tomforde, H.; Linde-Gas; personal communication, 24 October 2004	xxHL/ EMEL1_LH1
Total 2001	Dautrebande, O., TotalFinaElf; personal communication November 2001	GRxx/GRxH/ GRELx_CHx
Total 2002	Dautrebande, O., TotalFinaElf, personal communication January 2002	COD1/COG1/G RMB1/xxET/LR EB1/xxFA/xxHY/ xxSD/ xxME/xxDE/ /COHT/GRCH3
UBA 1999	Kraus, K.; Niklas, G.; Tappe, M.; Umweltbundesamt (UBA), Deutschland: Aktuelle Bewertung des Einsatzes von Rapsöl/RME im Vergleich zu DK; Texte 79/99; ISSN 0722-186X	ROFA/ROFE/S OFA/SYFA
US Renderers	www.nationalrenderers.org	TOxx
US RFS-2 2010	http://www.epa.gov/otaq/fuels/renewablefuels/index.htm (accessed	3.4.1

WTW Appendix 2

	18/03/2013)	
Vandenborre 2003	Vandenborre Hydrogen Systems, Oevel, Belgium: Hydrogen and Oxygen Generator H2 IGEN; www.HydrogenSystems.com	3.5.2 RExx/ XXXX_CHx
Waldau, 2013	Waldau, Monforti-Ferrario, Banja et al. "Renewable Energy Snapshots 2012" JRC scientific and policy reports, 2013. Available at: http://iet.jrc.ec.europa.eu/remea/renewable-energy-snapshots-2012	2.5.1
Wicke, 2012	Indirect land use change: review of existing models and strategies for mitigation, B Wicke, P. Verweij, H. van Meijl, D.P. van Vuuren, A.P.C. Faaij, <i>Biofuels</i> 3 (1), 87 (2012).	3.4.1
Winslow 2004	Winslow, J., C., National Energy Technology Center, at the Coal Utilization Technologies Workshop on September 22, 2004 at the National Research Center for Coal & Energy; Morgantown, WV. This meeting was part of the Energy Roadmap Workshop Series commissioned by West Virginia Governor Bob Wise	KOSD1C
Wittkopf 2005	Wittkopf, St.: Das Biomasse-Heizkraftwerk Pfaffenhofen; 2005	WxEH_HE
Wooley 1999	Wooley, R.; Ruth, M.; Sheehan, J.; Ibsen, K.; Biotechnology Center for Fuels and Chemicals; Majdeski, H.; Galvaz, A.; Delta-T Corporation: Lignocellulosic Biomass to Ethanol Process Design and Economics Utilizing Co-Current Dilute Acid Prehydrolysis and Enzymatic Hydrolysis Current and Futuristic Scenarios; National Renewable Energy Laboratory (NREL); July 1999	WxFET1/STET1
Wuppertal 2004	Dienst, C.; Fishedick, M.; Hanke, Th.; Langrook, Th.; Lechtenböhmer, St.; Wuppertal Institut für Klima, Umwelt, Energie GmbH; Assonov, S.; Brenninckmeijer, C.; Max-Planck-Institut: Treibhaushasemissionen des russischen Exportpipeline-System - Ergebnisse und Hochrechnungen empirischer Untersuchungen in Russland; Projekt im Auftrag der E.ON Ruhrgas AG, durchgeführt durch das Wuppertal Institut für Klima, Umwelt, Energie GmbH in Zusammenarbeit mit dem Max-Planck-Institut für Chemie, Mainz; Dezember 2004	3.2.3 GPxx
Wuppertal 2009	Wuppertal Institut fuer Klima, Umwelt, Energie GmbH; June 2009. Personal communication.	OWCG4/GPxHx /GPELx_CHx
Wurzig 1996	Würsig, G., M., Germanischer Lloyd, Hamburg: Beitrag zur Auslegung von mit Wasserstoff betriebenen Hauptantriebsanlagen für Flüssig-Wasserstoff-Tank-schiffe; Dissertation an der Universität Hannover; Verlag Mainz - Wissenschaftsverlag Aachen 1996; ISBN 3-89653-077-1	GRHL1

Europe Direct is a service to help you find answers to your questions about the European Union
Freephone number (*): 00 800 6 7 8 9 10 11

(*) Certain mobile telephone operators do not allow access to 00 800 numbers or these calls may be billed.

A great deal of additional information on the European Union is available on the Internet.
It can be accessed through the Europa server <http://europa.eu/>.

How to obtain EU publications

Our priced publications are available from EU Bookshop (<http://bookshop.europa.eu/>),
where you can place an order with the sales agent of your choice.

The Publications Office has a worldwide network of sales agents.
You can obtain their contact details by sending a fax to (352) 29 29-42758.

European Commission
EUR 26236 EN – Joint Research Centre – Institute for Energy and Transport

Title: WELL-TO-WHEELS Appendix 2 – Version 4.a. Reference List

Author(s): Robert EDWARDS (JRC), Heinz HASS (EUCAR), Jean-François LARIVÉ (CONCAWE), Laura LONZA (JRC), Heiko MAAS (EUCAR), David Rickeard (CONCAWE)

Luxembourg: Publications Office of the European Union

2014 – 19 pp. – 21.0 x 29.7 cm

EUR – Scientific and Technical Research series –ISSN 1831-9424 (online)

ISBN 978-92-79-33887-8 (PDF)

doi: 10.2790/95533

Abstract

The JEC research partners [Joint Research Centre of the European Commission, EUCAR and CONCAWE] have updated their joint evaluation of the well-to-wheels energy use and greenhouse gas emissions for a wide range of potential future fuel and powertrain options.

This document reports on the fourth release of this study replacing Version 3c published in July 2011.

The original version was published in December 2003.

JRC Mission

As the Commission's in-house science service, the Joint Research Centre's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle.

Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new methods, tools and standards, and sharing its know-how with the Member States, the scientific community and international partners.

*Serving society
Stimulating innovation
Supporting legislation*

