PIPE DREAMS?

JOBS GAINED, JOBS LOST BY THE CONSTRUCTION OF KEYSTONE XL

A REPORT BY CORNELL UNIVERSITY GLOBAL LABOR INSTITUTE

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TABLE OF CONTENTS

1 Introduction

2 Main Findings

4 TransCanada Will Spend $3 to $4 Billion in the US, Not $7 Billion as Claimed

7 KXL Will Generate 2,500-4,650 Construction Jobs

8 Most Jobs Created Will Be Temporary and Non-Local

11 KXL Steel Manufactured Outside the United States

15 Construction Services: Engineering/Design/Technical/Support

17 Perryman Study Deeply Flawed and Provides No Sound Basis for Jobs Claims

21 Total (Direct, Indirect, and Induced) Jobs from Keystone XL

26 KXL Will Have Minor Impact on Unemployment Levels

27 Four Ways Keystone XL Could Be a Job Killer

35 Conclusion: Employment Potential from KXL is Little to None; Decision should be based on other factors

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The updates to the original report consist of corrections of typographical errors and minor miscalculations. Additional citations have also been provided in the section pertaining to the Keystone XL budget and expenditures, steel sourcing, and the costs of environmental damage.

INTRODUCTION

The purpose of this briefing paper is to examine claims made by TransCanada Corporation and the American Petroleum Institute that, if constructed, TransCanada's proposed Keystone XL (KXL) pipeline will generate enough employment to kick-start important sections of the US economy through the creation of tens of thousands—perhaps even hundreds of thousands—of good, well-paying jobs for American workers.

This briefing paper raises a number of questions regarding the jobs claims promoted by the industry, questions that are serious enough to generate a high level of skepticism regarding the value of KXL as an important source of American jobs. With national unemployment levels presently (September 2011) around 9%, and the real unemployment figures considerably higher, jobs are desperately needed both to sustain families and to help the broader economy. However, it is our assessment—based on the publicly available data—that the construction of KXL will create far fewer jobs in the US than its proponents have claimed and may actually destroy more jobs than it generates.

The results presented below should also cast doubt on the recent claim made by American Petroleum Institute that the oil industry could create more than a million jobs over the next decade—if the US government would open public lands, beaches, oceans, to unlimited oil drilling. If the industry's jobs estimates made in the context of KXL are any indication, then this broader claim should be scrutinized very carefully indeed.

MAIN FINDINGS

The main points in this briefing paper can be summarized as follows:

» The industry's US jobs claims are linked to a $7 billion KXL project budget. However, the budget for KXL that will have a bearing on US jobs figures is dramatically lower—only around $3 to $4 billion. A lower project budget means fewer jobs.

» The project will create no more than 2,500-4,650 temporary direct construction jobs for two years, according to TransCanada's own data supplied to the State Department.

» The company's claim that KXL will create 20,000 direct construction and manufacturing jobs in the U.S is not substantiated.

» There is strong evidence to suggest that a large portion of the primary material input for KXL—steel pipe—will not even be produced in the United States. A substantial amount of pipe has already been manufactured in advance of pipeline permit issuance.

» The industry's claim that KXL will create 119,000 total jobs (direct, indirect, and induced) is based on a flawed and poorly documented study commissioned by TransCanada (The Perryman Group study). Perryman wrongly includes over $1 billion in spending and over 10,000 person-years of employment for a section of the Keystone project in Kansas and Oklahoma that is not part of KXL and has already been built.

» KXL will not be a major source of US jobs, nor will it play any substantial role at all in putting Americans back to work. Even if the Perryman figures were accurate, and all of the workers for the next phase of the project were hired immediately, the US seasonally adjusted unemployment rate would remain at 9.1%—exactly where it is now.

» KXL will divert Tar Sands oil now supplying Midwest refineries, so it can be sold at higher prices to the Gulf Coast and export markets. As a result, consumers in the Midwest could be paying 10 to 20 cents more per gallon for gasoline and diesel fuel. These additional costs (estimated to total $2–4 billion) will suppress other spending and will therefore cost jobs.

» Pipeline spills incur costs and therefore kill jobs. Clean-up operations and permanent pipeline spill damage will divert public and private funds away from productive economic activity. In 2010 US pipeline spills and explosions killed 22 people, released over 170,000 barrels of petroleum into the environment, and caused $1 billion dollars worth of damage in the United States.

» Rising carbon emissions and other pollutants from the heavy crude transported by Keystone XL will also incur increased health care costs. Emissions also increase both the risk and costs of further climate instability.

» By helping to lock in US dependence on fossil fuels, Keystone XL will impede progress toward green and sustainable economic renewal and will have a chilling effect on green investments and green jobs creation. The green economy has already generated 2.7 million jobs in the US and could generate many more.

A NOTE ON ENERGY INDEPENDENCE AND "ETHICAL OIL"

This paper is primarily concerned about jobs, but the findings below also shine light on another claim made by the industry—that KXL will get the US further on the road to energy independence. The idea of energy independence clearly resonates with the American public, and the paid advertisements depicting Canadian Tar Sands as the source of "ethical oil" (and therefore a better option than oil from dictatorships like Saudi Arabia) plays to that sentiment. But KXL is a global project driven by global oil interests. Tar Sands development has attracted investment capital from oil multinationals—with Chinese corporations' stake getting bigger all the time.[1] If approved, KXL will almost certainly be constructed by temporary labor working with steel made in Canada and India. Much of the Tar Sands oil will be refined in Port Arthur, Texas, where the refinery is half-owned by Saudi Aramco, the state-owned oil company of Saudi Arabia.[2] And a good portion of the oil that will gush down the KXL will, according to some studies, probably end up being finally consumed beyond the territorial United States.[3] Indeed, the oil industry is also trying to build another pipeline, Enbridge's proposed Northern Gateway, to carry Tar Sands oil across British Columbia for export to Asian markets, although this pipeline also faces serious public opposition. Clearly, Tar Sands oil and energy independence really do not belong in the same sentence.

1 Dlouhy, Jennifer. "China Invests Billions in Canada Oil Sands,"Houston Chronicle, September 19, 2011. http://www.chron.com/business/article/China-invests-billions-in-oil-sands-2176114.php

2 Harder, Amy. "US Oil Giants Poised to Gain on Keystone Pipeline," National Journal, August 5, 2011. http://www.nationaljournal.com/energy/u-s-oil-giants-poised-to-gain-on-keystone-pipeline-20110804

3 Droitsch, Danielle. "The Link between Keystone XL and Canadian Oilsands Production," Pembina Institute, April 2011.

TRANSCANADA WILL SPEND $3 TO $4 BILLION IN THE US, NOT $7 BILLION AS CLAIMED

A serious question surrounds the exact size of the KXL project in monetary terms. The industry's US jobs estimates refer to the ***total*** $7 billion budget—so there is a clear association between this number and the jobs a $7 billion project might produce. The State Department's FEIS job and tax revenue projections are also based on $7 billion in expenditures.[1] However, the part of the budget for KXL that will have a bearing on US jobs figures is much lower—only around $3 to $4 billion. A lower budget means fewer jobs. The Keystone Project Budget Analysis Chart provides a graphic illustration of how the Keystone budget is broken down and how the KXL US budget is revised from TransCanada's $7 billion claim to the more relevant $3 to $4 billion.

In its Presidential Permit Application for KXL, TransCanada stated that, "The capital cost of the US portion of the Project, from the US-Canada border to the Gulf Coast is estimated to be US $5.443 billion."[2] KXL US (the portion of the KXL project within the US) is not a $7 billion project. Rather, KXL US plus KXL Canada (the portion within Canada) are together a $7 billion project.

As shown on the Budget Analysis Chart, KXL Canada costs $1.6 billion.[3] Within the US, the KXL project budget is $5.4 billion, not $7 billion.[4] Therefore, approximately 23% of the $7 billion total cost of KXL is for the Canadian portion of the pipeline.

Moreover, all of the above figures are estimates of costs from project start to finish. So all these figures also substantially overestimate how much now remains to be spent. Construction has not yet started on KXL, but there have already been several years of activities preparing for possible construction. According to TransCanada's interim financial statement released on July 28, 2011, the capital cost of the larger Keystone project (made up of the segments already completed and KXL) is $13 billion. Of this $13 billion, $7.9 billion had already been invested by June 30, 2011. Of the $7.9 already invested,

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1 US State Department's Final Environmental Impact Statement (FEIS), Socioeconomics, pp. 3.10-58, 3.10-91. http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf?Open

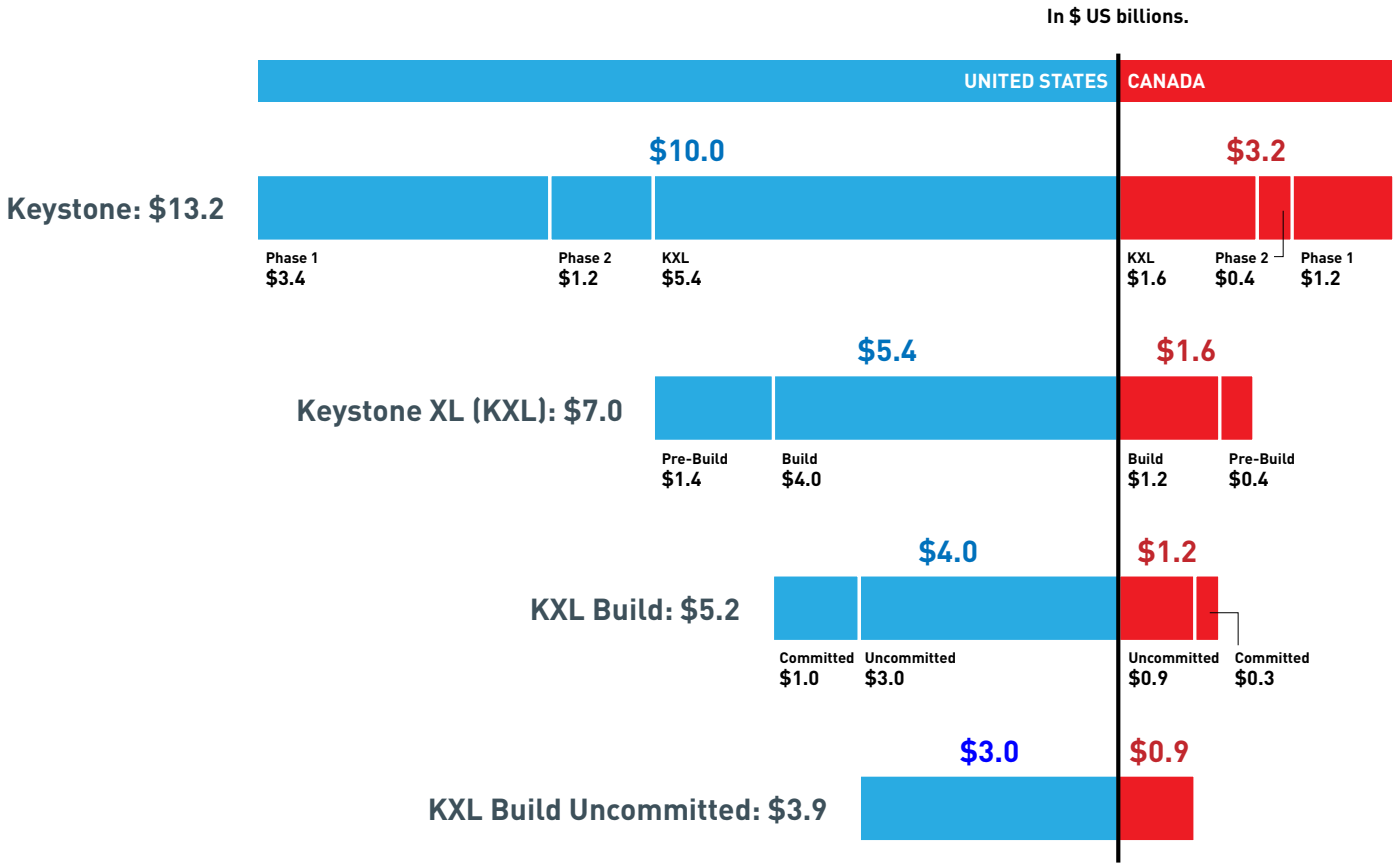
2 Letter from TransCanada to the US Department of State regarding the Keystone XL Application, September 19, 2008. http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf/presidentialpermitapplication.pdf?OpenFileResource

3 In its Canadian NEB Application for KXL, TransCanada states, "The capital cost of the Project is currently estimated to be approximately $1.7 billion". TransCanada Keystone Pipeline GP Ltd., Keystone XL Pipeline Section 52 Application, submitted on February 27, 2009, p. 1. https://www.neb.gc.ca/ll-eng/livelink.exe?func=ll&objId=549164&objAction=Open.

The above cost estimate is in Canadian dollars. The exchange rate between US and Canadian currencies has fluctuated throughout the Keystone project and is currently near parity. For the purposes of this Budget Analysis, the above KXL Canada cost estimate (CAD$1.7 billion) has been converted to US $1.6 billion, which together with the cost of KXL US ($5.4 billion) equals $7 billion (the cost for KXL reported by TransCanada). It should be understood that this Budget Analysis is based on the information made public by TransCanada and may thus be somewhat approximate.

4 As discussed in footnote 1, the State Department's FEIS estimates US property tax revenues for KXL based on an assumed $7 billion project cost. So in effect, the FEIS is assuming that KXL will be paying US property taxes for the entire project, including the portion in Canada. Even those evaluating the KXL project for the US Federal Government do not seem to be have ready access to accurate cost estimates for the US portion of the project.

KEYSTONE PROJECT BUDGET ANALYSIS



$1.7 billion is related to KXL.[5] So prior to any actual construction, about 25% of the KXL budget has already been expended for activities including design, permitting, and materials procurement.[6]

In other words, for the entire $13 billion Keystone project, $6.2 billion has already been spent to complete earlier phases of the project that are now in service. The entire budget for just the KXL project is $7 billion, but $1.7 billion of this has already been spent as of mid-year 2011. So remaining KXL spending (as of mid-year 2011) was only $5.3 billion in both US and Canada.

The Budget Analysis assumes ongoing spending, so a total of $1.8 billion has now been expended; remaining KXL spending is $5.2 billion. And as explained above, only 77% of the KXL project costs are within the US. Thus, the remaining KXL spending within the US is now $4 billion.

Moreover, TransCanada's financial statements also reveal that it has already made commitments to spend an additional $1.2 billion, which means TransCanada has already spent or committed almost 40% of the total KXL budget as of year-end 2010. At the end of 2010, the remaining budget (not already committed or spent) was only $4.4 billion for the entire KXL project and as of late 2011, the remaining budget is estimated to be

5 TransCanada, Second Quarterly Report, July 28, 2011, p. 31 (PDF p. 39) http://www.transcanada.com/docs/Investor_Centre/2011_q2_english_corp.pdf.

6 The accounting for KXL costs already incurred presumably includes a wide range of activities in support of permitting, such as the Perryman Group study.

as low as $3.9 billion.[7] And for the approximately 77% of project costs within the US, the remaining budget (not already committed or spent) could now be as low as $3 billion. Thus, the incremental spending within the US that is actually associated with building KXL may be less than half of the industry's $7 billion figure.

These figures essentially mean that TransCanada's claim that KXL is a $7 billion stimulus to the US economy is misleading on three levels. First, $1.6 billion will be spent on the Canadian portion of the pipeline, drawing largely on Canadian material and labor inputs. Second, at least $1.8 billion of the $7 billion has already been spent, mostly on design, permitting, and material inputs. Third, in addition to the $1.8 billion already spent, another $1.3 billion of KXL costs has already been committed. These committed costs may be incurred regardless of whether the project is actually constructed.

Therefore, we calculate that the actual spending relevant to the US economy, and the figure from which US new job creation projections should be calculated, is around $3 to $4 billion, not $7 billion.[8] Once again, see the Keystone Project Budget Analysis Chart for a step-by-step illustration of how the $3 to $4 billion KXL US budget is derived from TransCanada's original and misleading $7 billion claim.

Money already spent in the past few years, plus money budgeted for the Canadian part of KXL, should not be presented as though it were part of future US-related spending pending the approval of the project. The money is gone and the work has been done (or soon will be). This spending will lead to few if any new jobs in the US. Likewise, some (and possibly all) of the money committed, but not yet spent, will be spent even if KXL is not built and should therefore not be considered in the analysis of the incremental spending that will occur should the project be approved.

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7 As of year-end 2010, TransCanada had already spent $1.4 billion and was committed to spend another $1.2 billion on KXL. The remaining budget at the end of 2010 is $4.4B= ($7.0B- $1.4B- $1.2B) TransCanada, 2010 Annual Report, p. 33 http://www.transcanada.com/docs/Investor_Centre/2010_TCC_AR_Eng.pdf. By mid-year 2011, $1.7 billion was already spent for KXL(see footnote 5). Given continued spending, $1.8 billion would have been spent by late 2011. Commitments could drop over time as they are converted to spending, but could also continue to rise in the period leading up to possible construction start. So consistent with the later scenario, current commitments of $1.3 billion are assumed in the Budget Analysis. Thus, the estimated remaining budget as of late 2011 is $3.9 B= $7.0B- $1.8B- $1.3B.

8 Calculation based on the data provided above: $7 billion total KXL project cost, $1.6 billion for Canadian portion of KXL, $1.8 billion now already expended, and $1.3 billion already committed as of now. Based on the overall KXL budget, the US share of KXL costs is 77% = (($7.0B-$1.6B)/$7.0B). It follows then that the US share of not yet expended KXL costs is $4.0B= ($7.0B - $1.8B) * 77%. And US share of KXL costs not yet expended or committed is $3.0B= ($7.0B - $1.8B - $1.3B) * 77%.

KXL WILL GENERATE 2,500-4,650 CONSTRUCTION JOBS

A calculation of the direct jobs that might be created by KXL can begin with an examination of the jobs on-site to build and inspect the pipeline. The project will create no more than 2,500-4,650 temporary direct construction jobs for two years, according to TransCanada's own data supplied to the State Department.[9]

The State Department's FEIS considers each component of construction labor, and provides jobs data for the construction spreads, pump stations, and tank farms:

» Construction of the pipeline is planned to occur in 17 construction spreads or completed lengths (Table 3.10.1-13). Ten spreads are planned along the proposed Steele City Segment, six spreads along the proposed Gulf Coast Segment, and one spread along the proposed Houston Lateral. Final spread configurations and construction schedules could result in shorter spreads.

» Approximately 500 to 600 construction and inspection personnel would work on each spread, except for the proposed Houston Lateral which would require approximately 250 workers. Each spread would require 6 to 9 months to complete. Construction of new pump stations would require 20 to 30 additional workers at each site. Construction of all pump stations would be completed in 18 to 24 months. Tank farm construction would require approximately 30 to 40 construction personnel over a period of 15 to 18 months.[10]

Based on jobs information provided by TransCanada for the FEIS, KXL US on-site construction and inspection creates only 5,060-9,250 person-years of employment (1 person-year = 1 person working full time for 1 year). This is equivalent to 2,500-4,650 jobs per year over two years.

On-site construction labor thus accounts for only a small share (about 5-10%) of overall KXL US project costs.[11] Stated another way, KXL US on-site employment is only about 1-2 person-years per $1 million project cost.[12]

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9 US State Department's Final Environmental Impact Statement (FEIS), Socioeconomics, Section. 3.10-53, 54. http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf?Open. Calculation based on jobs information provided by TransCanada for the FEIS.

10 FEIS, Socioeconomics, op.cit. Section 3.10-53, 54.

11 For the low end of the range, assumptions are 5,060 person-years of employment and an average cost of $50,000 per person-year; labor cost totals $253 million, which is 4.7% of KXL US project cost ($5.4 billion). For the high end of the range, assumptions are 9,250 person-years of employment and an average cost of $60,000 per person-year; labor cost totals $555 million, which is 10.3% of KXL US project cost. The FEIS (Socioeconomics, op.cit. Section 3.10-57) estimated KXL labor cost of $349– 419 million, which is within the range calculated above.

12 5,040 person-years /$5,400 million = 0.93 person-years per $1 million; 9,250 person-years/$5,400 million = 1.71 person-years per $1 million.

MOST JOBS CREATED WILL BE TEMPORARY AND NON-LOCAL

The number of jobs that could be created by the construction of KXL is by no means insignificant. But the overall impact of these jobs should not be overstated. TransCanada's submission to Canada's National Energy Board (NEB) led to the Board stating:

> The Board finds that the socio-economic impacts of the Keystone XL Project will be of a **temporary nature and limited to the relatively short duration of pipeline construction without significant long term effect on the surrounding communities**.[13] (Emphasis added)

In its application to the NEB, TransCanada stated:

> Total direct and indirect construction employment that will amount to about 5310 person- months of employment and an estimated $58 million in wages and salaries. This includes the Hardisty B terminal, pipeline and eight pump stations and their associated power lines... **Construction is short term, workers' families are not expected to move into the area** and area medical facilities are adequate to deal with any on-the-job injuries.[14] (Emphasis added)

In the US, construction jobs will be created in the 6 states along the pipeline's route. Based on the FEIS estimates, there would also be between 3 and 7 person-years of construction labor per mile of new pipeline construction in 5 states—Montana, South Dakota, Nebraska, Oklahoma and Texas. There would also be about 60-120 person-years of construction labor to upgrade the existing Keystone pipeline in Kansas.[15]

The State Department's FEIS states that "the proposed Project has the potential to generate substantial direct and indirect economic benefits for local and regional economies along the pipeline route." However, the report also estimates that just 500 to 900 workers are expected to be hired locally—roughly 10-15% of the total workers hired.[16]

Based on data provided by TransCanada to the State Department, only between 506 and 1,387 workers would be hired locally.[17] A state-by-state breakdown indicates that KXL will create between 93 and 257 jobs for residents in Montana; 121-333 jobs in South

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13 National Energy Board (NEB), "Reasons for Decision," March 2010, p.77.

14 TransCanada Keystone Pipeline GP Ltd., "Keystone XL Pipeline Section 52 Application, Section 14: Environmental and Socio-Economic," pp.25-6.

15 The Keystone project has already built a 36-inch pipeline through Kansas. The KXL project will make use of this existing segment (commissioned in February 2011) from Steele City, Nebraska, to Cushing, Oklahoma. There will be no new pipeline added within Kansas, but the KXL project does include adding two new pump stations along the existing pipeline in Kansas.

16 FEIS, Socioeconomics, op.cit. Section 3.10-57.

17 For the purposes of this calculation, it is assumed that the average duration of employment is one year. So number of person-years equals number of workers.

Dakota; 90-248 jobs in Nebraska; 6-18 jobs in Kansas; 41-113 jobs in Oklahoma; and 156-420 jobs in Texas.[18]

Information provided by TransCanada regarding the construction of Keystone Phase 1 further indicates that KXL is likely to provide only a limited number of jobs to residents along the pipeline's route. Responding to an inquiry made to TransCanada by the South Dakota Public Utilities Commission, TransCanada officially reported that during the construction of Keystone Phase 1 it employed a total of 2,580 workers in South Dakota, but only 282 workers (11%) of the workers were residents of the state. This included 20 workers in supervision, 3 welders, 32 truck drivers, 27 equipment operators, 110 laborers, and 90 construction managers, surveyors or inspectors.[19].

Building KXL US would require only a modest amount of on-site construction and inspection workers and for only a short period. Moreover, local hiring would be tiny, because it is only a small proportion (10–15 %) of a small number of total jobs.

So to the extent that the KXL US project could have significant employment impacts, these jobs would have to be off-site. Thus, it is important to also consider the labor requirements associated with the materials and supplies which are inputs to the KXL US project.

18 Similar results were calculated by National Wildlife Foundation based on information provided by TransCanada to the DEIS. Factsheet: http://www.nwf.org/~/media/PDFs/Global%20Warming/Tar-Sands/Keystone_XL_Jobs_11-09-10.ashx. Sum of components does not equal totals due to rounding.

19 TransCanada Keystone Pipeline, LP's Objections and Responses to Dakota Rural Action's First Set of Interrogatories and Request for Documents, Case #: HP09-001, August 24, 2009. http://www.puc.sd.gov/commission/dockets/hydrocarbonpipeline/2009/hp09-001/091809aff.pdf

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KXL STEEL MANUFACTURED OUTSIDE THE UNITED STATES

TransCanada claims that "**The $7 billion (KXL) pipeline project is expected to directly create more than 20,000 high-wage manufacturing jobs and construction jobs in 2011-2012 across the US, stimulating significant additional economic activity.**"[20] This claim is misleading and erroneous on a number of levels.

First, as discussed above, the budget for KXL US that relates to incremental US employment is $3 to $4 billion and not the $7 billion claimed by the proponents. Second, TransCanada and other KXL proponents are giving the impression that KXL will create a high number of manufacturing jobs. This is simply not true. The main manufacturing activity related to pipeline construction is the manufacture of the steel pipe. The 36-inch steel pipe is the largest single materials input for KXL. This is literally the pipe in the pipeline. In general, pipeline construction is not a manufacturing-intensive activity even if the steel itself is also being manufactured onshore.

This section will present strong evidence that:

(a) almost half (and perhaps more) of the primary material input for KXL—steel pipe—will not even be produced in the United States;

(b) based on the experience of Phases 1 and 2, the final processing work for KXL will probably be performed in the US with most of the steel and pipe sourced from oustide of the US (notably India and South Korea).[21]

In making a case for the thousands of manufacturing jobs offered by KXL, TransCanada provides the assurances that "approximately 75% of the pipe for the US portion of the proposed Project would be purchased from North American pipe manufacturing facilities and that regardless of the country of origin, it would purchase pipe only from qualified pipe suppliers and trading houses."[22] However, there is strong evidence to suggest that almost half of the primary material input for KXL—steel pipe—will not even be produced in the United States.

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20 TransCanada's website (viewed Sept. 19, 2011). http://www.transcanada.com/economic_benefits.html

21 Beyond the evidence discussed below regarding the off-shoring of the steel pipe manufacturing, we note that the Perryman study does not substantiate the claim that KXL will result in a high level of manufacturing jobs. This finding is consistent with other recent studies of employment impacts associated with major pipeline projects. The Perryman study estimates large employment impacts for KXL construction, but only a small portion of these added jobs are in manufacturing industries. Perryman Group, The Impact of Developing the Keystone XL Pipeline Project on Business Activity in the US, June 2010, pp. 44-51. http://www.transcanada.com/economic_benefits.html. A study projected that 4,000 manufacturing jobs will be created in Canada for a similar-sized pipeline construction project (the proposed Northern Gateway Project), assuming the steel is made in Canada. Enbridge Northern Gateway Project (Volume 6C: Environmental and Socio-Economic Assessment (ES)-Human Environment, Section 4: Socio Economic Condition, pp.4-7, 4-12 to 4- 19. https://www.neb.gc.ca/ll-eng/livelink.exe/fetch/2000/90464/90552/384192/620327/624798/620129/B3-16_-_Vol_6C_–_Gateway_Application_–_Human_Environment_ESA_(Part_1_of_3)_-_A1T0G6_.pdf?nodeid=620083&vernum=0

22 FEIS, op.cit. Volume 1, Project Description, Page 2-26. http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf?Open

KXL will require over 800,000 tons of carbon steel pipe.[23] TransCanada has contracted with an Indian multi-national company, the Mumbai-based Welspun Corp Limited, and a Russian company, Evraz, to manufacture steel pipe for KXL.[24]. In fact, a significant portion of the $1.7 billion already invested in KXL by TransCanada has likely been used towards the manufacture and import of the pipe. Clearly, this is an investment that is for the most part generating economic activity and job creation *outside* of the US. TransCanada's claims that US manufacturing would reap considerable benefits from the project need to be viewed in the light of these data.

Of this writing, TransCanada has not received the Presidential Permit that is required to construct the KXL pipeline, but has already signed contracts for almost 50% of the steel pipe for the project.[25] The Russian company, Evraz, will manufacture about 40% of KXL pipe in its Camrose and Regina mills in Canada. This information is based on Evraz's own contract announcements and their contracts with Bredero Shaw, the company coating the KXL pipes.[26]

The Indian company, Welspun, is likely to be manufacturing the rest of the pipe for the KXL project. To date, Welspun has manufactured and imported almost 10% of the pipe for KXL. Shipping and customs records show that TransCanada imported over 70,000 tons of carbon steel pipe from Welspun through the Port of New Orleans since April

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23 KXL would require about 830,000 tons of pipe based on engineering calculations (documented below) for KXL characteristics (length, pipe specifications, and prevalence of zones requiring heavier pipe). KXL requirements of 880,000 tons have been reported in industry publications. AMM Keystone XL Pipeline Doubts Mount, Metal Bulletin, April 13, 2011. http://www.metalbulletin.com/Article/2807225/AMM-Keystone-XL-pipeline-doubts-mount.html. Engineering Calculations: Steel pipe weight (pounds/foot) = 10.69 * (OD -WT) * WT; OD = outside diameter (inches); WT = wall thickness (inches). Source: http://www.bergpipe.com/files/print_helpfultables1.pdf. 1 pound/foot = 2.64 tons/mile = (5280 feet per mile/2000 pounds per ton). For KXL, outside diameter = 36 inches; pipe thickness varies from 0.465 inches to 0.748 inches. Pipe heavier than the minimum is required in sensitive areas (e.g., high population, pump stations, and railway crossings). Areas requiring heavier pipe are estimated to be a relatively small portion of the total mileage, so average pipe thickness will not be substantially higher than the minimum. Weighted average pipe thickness is assumed to be approximately 0.486 inches for the 1384 miles in the US and 0.475 inches for the 327 miles in Canada. Total pipe required for the KXL route in the US is approximately 674,000 tons (~10.69 * (36-0.486) * 0.486 * 1384 * 5280/2000) and in Canada approximately 156,000 tons (~10.69 * (36-0.475) * 0.475 * 327 * 5280/2000). Sources: FEIS, op. cit. Volume 1, Introduction, Page 1-2 http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf/04_KXL_FEIS_Sec_1.0_Introduction.pdf?OpenFileResource; FEIS, Project Description, Section 2-26., op. cit.; FEIS, op. cit. Volume 7, Appendix P: Pipeline Risk Assessment and Environmental Consequence Analysis pp. 4-19, 20; http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf/FEISAppendix_P_Risk-Assessment-and-Appendix-A.pdf?OpenFileResource. TransCanada Keystone Pipeline GP Ltd., "Keystone XL Pipeline Section 52 Application, Section 6: Engineering," p. 13. https://www.neb-one.gc.ca/ll-eng/livelink.exe?func=ll&objId=549333&objAction=Open. The calculations in this report regarding where the steel pipe for KXL is being manufactured are based on KXL requiring a total of 830,000 tons of pipe.

24 In a September 29, 2009 press release, Evraz announced that they received a significant order from TransCanada Corporation to produce pipe for KXL. See Evraz News, September 24, 2009. http://www.evraz.com/press/?ID=10351&PAGEN_1=9. As of September 2011, TransCanada has imported 70,000 tons of 36 inch pipe (KXL is the only section of the Keystone pipeline project using 36 inch pipe; the other sections used smaller diameter pipe) from Welspun Corporation. This data were obtained through Import Genius, a database that tracks US imports and exports through US Customs Records. The records clearly state that the consignee, TransCanada Keystone Pipeline LP, imported 36 inch pipe from the shipper, Welspun Corporation, from the Port of Mundra, India to the Port of New Orleans, US in 7 different shipments between April 2011 and July 2011 (after completion of Keystone Phase II).

25 During 2011, TransCanada imported 70,000 tons of carbon steel pipe from Welspun Corporation. This is approximately 8.5% of the pipe needed for Keystone XL. In addition, Evraz will manufacture 40% of the total pipe for KXL. See Footnote 26 for further explanation of the amount of pipe Evraz is producing for KXL.

26 In a company newsletter, Bredero Shaw pipe coating company announced that it would coat 1,090 kilometers of 36 inch pipe for Keystone XL at its Shaw Plant in Regina, Canada. This is 40% of the total amount of pipe needed for KXL. Metal Bulletin,op cit; Bredero Shaw, Pipe Coating Solutions, Volume 2, 2010. http://www.brederoshaw.com/literature/newsletter/PipeCoatingSolutions_NA_2010_2.pdf. The Shaw Pipe facility is located next to Evraz Regina's pipe facility to "reduce logistical and management interface costs"—"with minimal pipe handling [between Shaw pipe coating and Evraz Regina pipe manufacturing facilities], damage to bare or coated pipe is reduced and repair costs are minimized." http://www.brederoshaw.com/plants/plant_regina.htm. While Evraz has not announced the exact amount of pipe they are producing for KXL, it is nevertheless clear that the 1,090 kilometers of KXL pipe Shaw Bredero's Shaw plant is coating will come from the Evraz Regina plant next door.

2011.[27] The pipe TransCanada has imported from Welspun since April 2011 meets the specifications for KXL (36 inch diameter) and has been imported after the completion of Keystone Phase 2, which also used 36 inch pipe. It therefore seems likely that the rest of the pipe needed for KXL will probably be manufactured in Welspun's Indian plants and then shipped to the U.S for final processing (double jointing and coating) or manufactured in Welspun's Arkansas plant, which imports raw coiled steel and other production inputs (notably from India and South Korea.)[28] These arrangements allow TransCanada to state that "approximately 75% of the pipe for the US portion of the proposed project would be purchased from North American pipe manufacturing facilities."[29] This claim is misleading on two levels. Firstly, it is possible to purchase from a North American facility, but this does not necessarily mean that the steel was produced in those facilities. Secondly, the jobs created in Canada-while important to the Canadian economy—should not then be pitched as "American jobs" to the media and the American public.[30]

TransCanada's decision to contract steel pipe for KXL from outside of the US is consistent with past practice. TransCanada imported almost all of the steel pipe needed for the US portion of Keystone Phase 1 (Hardesty, Alberta to Patoka, Illinois) from Welspun's plants in India.[31] In fact, when Welspun was sued by Kinder Morgan for producing substandard steel that led to pipeline leaks and spills: the Indian company that supplied the steel, ArcelorMittal, was also sued.[32] The rest of the pipe for Phase 1 was manufactured by Evraz in its Canadian mills and by Berg Steel Corporation, which has pipe mills both within and outside of North America.[33] TransCanada has and continues to import pipe components(such as valves) from various multi-national corporations like Orion Spa, Valvitalia and subsidiaries of Welspun.[34]

Regarding issues of the quality of the steel used for KXL (see section on oil spills, below), in 2011 TransCanada agreed to 57 new pipe safety specifications demanded by the US Pipeline and Hazardous Materials Safety Administration (PHMSA). The company was responding to the leaks and spills that had occurred following the construction of TransCanada's Phase 1 and Phase 2 pipelines. It is unclear how TransCanada plans to meet these new specifications for KXL US. Nor is it clear if and how the State Department is

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27 Import Genius, September 2011. See Footnote 24 for further explanation of source of data for TransCanada importing KXL pipe from Welspun Corporation's plants in India.

28 Import Genius, September 2011. US Customs records, compiled by Import Genius, show that TransCanada Corporation has also imported a number of raw steel products for Keystone XL, including hot rolled steel coils, mild steel, and other production inputs from India, South Korea and other countries in 2011.

29 FEIS, Project Description, Section 2-26., op. cit.

30 The work in Canada may yield some employment benefits to the US if US-based suppliers are involved-but the numbers are likely to be small.

31 In an interview with World Pipelines Magazine, Welspun explains that one of its main advantages is its global capacity to produce pipe: "Welspun used its global capacity to produce the pipe and related services to meet the demanding schedule required for the project [Keystone]. One of Welspun's greatest strengths is its global capacity, in India and the US. Multiple helically spiral welded pipe mills in India produced the bare pipe for the Keystone project and over 20 ocean going vessels supplied by Thorsten Shipping transported the bare pipe from the India port of Mundra to the US through the Ports of New Orleans and Houston." (http://www.welspunpipes.us.com/userfiles/file/Editonal%20-%20Worldpipeline%20Magazine%20-%20Aug%2009.pdf; Welspun Annual Report FY 2007-08, p. 10 http://welspunpipes.us.com/userfiles/file/WGSRL%20Annual%20Report%202007-08.pdf.

32 http://plainsjustice.org/files/Keystone_XL/Steel/Letter_re_TransCanada_Use_of_Substandard_Steel_2010-06-28.pdf; http://plainsjustice.org/files/SubstandardSteelReport.pdf. Kinder Morgan Louisiana Pipeline LLC v. Welspun Gujarat Stahl Rohren Ltd., 752 F. Supp. 2d 772 (S.D. Tex. 2010).

33 Berg Spiral Pipe Corp website http://www.bergpipe.com/130-1-Project-List.html; Bredero Shaw Pearland, op. cit.

34 Import Genius, September 2011. See Footnote 24 for further explanation of source of data for TransCanada importing KXL pipe from Welspun Corporation's plants in India.

monitoring where TransCanada is producing the pipe for KXL US or whether the pipe meets PHMSA's specifications. Import records show that TransCanada had already imported close to 10% of the pipe for KXL in early 2011.[35] It is likely that much of the steel pipe for KXL has already been manufactured; the pipe has to be produced substantially before major construction activity begins in order to allow time for double jointing, pipe coating and transport to the construction location.

All in all, the claims made by KXL proponents that the project will generate thousands of manufacturing jobs are unsubstantiated and misleading. If a significant proportion of the pipe is fabricated outside the US, this further decreases positive US employment impacts. Furthermore, the evidence also suggests that only final processing work is likely to be done in the US, and that other pipe components are also being imported. This further reduces any potential US manufacturing jobs impacts.

Finally, there is evidence to suggest that TransCanada could be offshoring safety concerns, as well as jobs. The fact that the steel and steel pipe are being imported from outside the US has a safety impact in an area that has already been prone to catastrophic accidents. As indicated above, the KXL project will be subject to more stringent safety specifications. However, it is unclear how TransCanada will meet these new specifications or how they will be monitored by US authorities, particularly if a major portion of the manufacturing is off-shore (and a significant amount of the pipe has already been produced). Moreover, the Indian company, Welspun, which is likely to be the largest steel pipe manufacturer for the project, is currently being sued for the sales of defective pipelines and has been repeatedly found to produce substandard steel. These safety concerns will be discussed in more detail in the "Oil Spills" section below.

35 See footnote 28.

CONSTRUCTION SERVICES: ENGINEERING/DESIGN/TECHNICAL/ SUPPORT

The study by the Perryman Group (discussed in more detail below) includes KXL pipeline construction jobs created from direct expenditures as well as a broader range of spin off jobs (direct jobs off-site, plus indirect and induced) from those expenditures.[36] Perryman's numbers include jobs in the 6 states along the pipeline's route as well as the job impact to the rest of the United States. Perryman anticipates that just over 40% of the total US employment would occur in Texas. On its face, this is not surprising. Over a quarter of the KXL US pipeline route is within Texas, and the Gulf Coast is a global center for a broad range of activities relating to the oil industry. The highly populous and industrialized Gulf Coast region (notably Texas) could provide a substantial amount of the overall construction labor and other inputs for KXL construction. Data from the Perryman study also suggests that the other 5 states along the pipeline's route would account for roughly one-third of total national US employment impacts from KXL construction.[37]

The Perryman study is based on expenditure and sourcing data provided by TransCanada, and none of that information has been disclosed or subject to independent review. The Perryman results (notably the high number of jobs estimated overall, and especially in Texas) are a strong indication that the Perryman study is assuming a high level of US content for KXL project sourcing. Put more simply, TransCanada and Perryman are claiming that materials, supplies, and services for KXL construction will in large part be provided by suppliers in Texas and elsewhere in the US, and that these KXL suppliers will in turn rely in large part on other US suppliers.

The previous section of this paper addressed the sourcing of the 36-inch steel pipe that is the largest single materials input for KXL—literally the pipe in the pipeline. But it should also be emphasized that a project like KXL includes very substantial expenditures for a wide variety of engineering, design, and other technical and support services. The US (and especially Texas) has traditionally been a global center for oil and gas industry support activities, including both materials and services.

But with the growth of the Tar Sands and related activities, Canada (and especially Alberta) has emerged as another global center for the oil and gas industry. And as would be expected, TransCanada (which is based in Calgary, Alberta) has very extensive and strong relationships with Canadian suppliers of pipeline materials and services. And Canadian suppliers have played a large role in all phases of the Keystone project.

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36 Perryman Keystone XL, 2010, op. cit.

37 Perryman Keystone XL, 2010, op. cit. pp. 44-51. The remaining jobs would be in the rest of US outside of the 6 pipeline states.

Moreover, it should be emphasized that logistics are a major consideration in pipeline construction and operations. Put simply, much of the KXL pipeline route (including the portion within the northern US, as well as in Canada) is closer to Alberta than to Texas.

The Perryman analysis assumes that KXL construction will have large impacts within the US and especially within Texas. But in reality, KXL sourcing will have a large component of suppliers from Canada as well as from outside North America.

PERRYMAN STUDY DEEPLY FLAWED AND PROVIDES NO SOUND BASIS FOR JOBS CLAIMS

The industry's claim that Keystone XL will create a total of 119,000 jobs is based on a deeply flawed and poorly documented study commissioned by TransCanada (The Perryman Group study). The Perryman study includes jobs from KXL construction (and possibly operations) in its calculation of overall employment impacts, estimated at close to 119,000 person years.[38] The Perryman study jobs estimates are claimed to incorporate a broad range of economic spin-offs (direct, indirect, and induced jobs).[39]

At the outset, the Perryman study lays out how this type of job study should be conducted:

> There are two essential steps in conducting an input-output analysis once the system is operational. The first major endeavor is to accurately define the levels of direct activity to be evaluated.[40]
>
> [...]
>
> the estimated costs of the pipeline and supporting facilities were provided by TransCanada and are consistent with available market information. The estimates are fully adjusted for both (1) the construction materials likely to be acquired from foreign sources and (2) the aspects of construction within individual states which do not reflect spending in the local areas.[41]
>
> [...]
>
> an important first step in quantifying the total economic impact of the pipeline expansion project is estimation of the direct outlays. As noted, approximate mileage and costs in various areas was provided by the developer, as well as the location and costs associated with collateral infrastructure. The Perryman Group used these estimates to define the direct activity associated with the project in the US and in each state along the route, which includes direct expenditures in construction and development of the pipeline as well as the corresponding multiplier effects associated with those expenditures. [42]
>
> [...]
>
> The second step is the simulation of the input-output system to measure overall economic effects. In the case of a prospective evaluation, it is necessary to first calculate reasonable estimates of the direct activity.[43]

38 Perryman Keystone XL, 2010, op. cit.
39 Perryman Keystone XL, 2010, op. cit. pp. 38-39.
40 Perryman Keystone XL, 2010, op. cit. p. 37.
41 Perryman Keystone XL, 2010, op. cit. pp. 21-22.
42 Perryman Keystone XL, 2010, op. cit. p. 22
43 Perryman Keystone XL, 2010, op. cit. p. 37.

However, by Perryman's own standards for conducting a quality job study, as cited above, the Perryman report fails on three major counts:

(a) Most importantly, Perryman fails to define the project that is being analyzed.

(b) Secondly, Perryman fails to properly define the overall cost of the project, as well as project-related spending.

(c) Related to point (b), Perryman provides no input data from TransCanada.

Regarding the last point (c), Perryman states that he received this data from TransCanada, but nowhere in the report does he provide the TransCanada input data (for construction expenditures and sourcing of inputs). Perryman does not even present summary detail as to the essentials regarding inputs (such as a breakdown of expenditures into major categories and assumptions regarding whether major inputs such as steel pipe are imported or sourced domestically or imported). Nor does the Perryman report provide adequate detail as to the nature of the job impacts estimated (such as a breakdown between direct, indirect, and induced). In fact, the lack of adequate data and detail render the report so opaque as to make meaningful review impossible.

Regarding points (a) and (b), the Perryman study's failure to be transparent, and to meet the standards of a quality jobs study, extends to even the most fundamental aspects. As a starting point, any jobs study for a proposed project must clearly define the project being analyzed and how much it is assumed to cost.

Despite its official title, the Perryman study results are not restricted to the Impact of the Proposed Keystone Expansion ("Keystone XL") Pipeline Project. Instead, in addition to the costs of the KXL segments, the project budget analyzed in the Perryman study also includes over $1 billion in costs for portions of the Keystone pipeline that are already constructed and operating. Specifically, the Perryman study redefines the KXL project to include Keystone Phase 2, a 298 mile 36-inch pipeline from Steele City, Nebraska to Cushing, Oklahoma that was built in 2010 and fully in-service as of February 2011. [44]

The Perryman study was issued in June 2010 when Keystone Phase 2 was already under construction and would soon be completed. Jobs relating to building Phase 2 are not relevant to the current review of the KXL project and in any event have now already been created. Moreover, Phase 2 is not part of the KXL project as defined in the Presidential Permit application submitted in September 2008 and under review by Department of State throughout the period of the Perryman study and currently.[45] So it is simply misleading for TransCanada to claim that the Perryman study is based on the impacts of the now proposed KXL project. Instead, the Perryman study is based on a substantially larger project. And this helps to explain why the estimated job impacts are so high and so hard to reconcile with the other available information regarding likely job impacts for the KXL project. So with respect to point (a), Perryman has failed to properly define the scope of the project that is being analyzed. The project reviewed in the Perryman study is not

44 Perryman Keystone XL, 2010, op. cit. pp. 10-11.

45 Phase 2 is part of the original Keystone project that was subject to a separate Department of State review, culminating in the issuance of a Presidential Permit in 2008. As explained in footnote 15, the KXL project does include the addition of two pump stations in Kansas along the existing Phase 2 pipeline.

the same as the project that is being reviewed for the Presidential Permit Process.

Likewise, with respect to point (b), the Perryman study fails to be transparent about the cost of the project being analyzed, as well as the details of project-related spending. In analyses of employment impacts, it is standard practice to provide results in terms of multipliers. In particular, a useful summary metric is jobs per dollar (person-years of employment per $1 million of project-related spending). Multipliers facilitate comparison of results within and across studies. With results expressed in terms of multipliers, projects (and other activities) with differing levels of spending can be compared to determine relative intensity of impacts. Projects with higher jobs per dollar are more labor-intensive.

The Perryman study does not present any of its results in terms of multipliers, and as a result it is difficult to compare the Perryman results with those of other studies. But the more basic problem is that the Perryman study fails to provide the amount of project-related spending being assumed. To calculate jobs per dollar, data must be provided for both jobs and dollars (the numerator and the denominator). The Perryman study does provide many results for jobs, but never makes clear what amount of dollars are being assumed in determining the job impacts. So in mathematical terms, the Perryman study provides lots of numbers for the numerator, but is notably silent as to the associated denominator. Again, according to the citations above from the Perryman study, it recognizes (at least in theory) the importance of defining multipliers for a quality job study.[46] In practice, however, no multiplier data have been reported in the study.

The only KXL cost data from TransCanada provided in the Perryman report is a single mention of the oft-cited $7 billion figure.[47] By itself, this utter paucity of cost data is highly unusual for a study estimating job impacts. Typically, cost data are front and center in such a study. Job impacts for a project can only be meaningfully considered in the context of project-related expenditures. The mention of the $7 billion figure (which includes costs within Canada) raises concerns as to whether the Perryman study is properly differentiating between KXL project costs in the US and Canada. The Perryman report does not provide documentation as to the amount of project costs being assumed, so it cannot be determined if costs within Canada are estimated to have jobs impacts within the US

Finally, given that the Perryman report provides no cost data, the only way to gain some insight into the Perryman study project cost assumptions is via review of the state-level reports accompanying (but not acknowledged within) the main Perryman study. Through the addition of project cost data that are subdivided into each of the state-level reports, it is revealed that Perryman wrongly includes over $1 billion in spending for a section of the Keystone project in Kansas and Oklahoma that is not part of KXL, and has already been built. These reports demonstrate that the project costs assumed for KXL in each of the 6 states along the combined KXL/Keystone Phase 2 route total $6.6 billion.[48] So the project

46 See footnote 42.

47 Perryman Keystone XL, 2010, op. cit. p. 1.

48 Capital costs assumed in Perryman analysis ($6.5615 billion): Montana $1.0 billion, South Dakota $0.8165 billion, Nebraska $1.3 billion, Kansas $1.0 billion, Oklahoma $0.845, Texas $1.6 billion (p. 1, all cites below)
http://www.transcanada.com/docs/Key_Projects/perryman_group_montana_report.pdf
http://www.transcanada.com/docs/Key_Projects/perryman_group_south_dakota_report.pdf
http://www.transcanada.com/docs/Key_Projects/Perryman_Group_Nebraska_Report.pdf http://www.transcanada.com/docs/Key_Projects/perryman_group_kansas_report.pdf
http://www.transcanada.com/docs/Key_Projects/perryman_group_oklahoma_report.pdf
http://www.transcanada.com/docs/Key_Projects/perryman_group_texas_report.pdf

costs assumed in the Perryman study exceed the costs now estimated for the KXL project in the US ($5.4 billion) by over $1 billion. Put another way, the project analyzed in the Perryman study is at least 20% larger (more costly) than the actual KXL project.

So even if the Perryman study does not include the cost of KXL in Canada, it still assumes total costs near the $7 billion figure. The Perryman study manages to achieve this result by adding in the already built Keystone Phase 2 pipeline to be part of an analysis which (on its face) purports to quantify solely the impacts of the Keystone XL project (not yet built).

A review of the state-level reports reveals that the Perryman study assumes substantial expenditures in every county along the entire Keystone Phase 2 route through Nebraska, Kansas, and Oklahoma.[49] As a result, the Perryman study assumes $1 billion in capital costs and 6,721 person-years of employment in Kansas,[50] where all pipeline construction has already been completed.[51] Likewise, the Perryman study assumes $0.845 billion in capital costs and 14,440 person-years of employment in Oklahoma, based on almost 240 pipeline miles for the combined XL and Phase 2 routing.[52] Phase 2 accounts for over a third of this total, so about a third of the impacts estimated by Perryman for Oklahoma are for Phase 2 and not KXL. Thus, the inclusion of Phase 2 has increased the Perryman estimates of project costs by over $1 billion and the employment estimates for Kansas and Oklahoma by more than 10,000 person-years.

Moreover, the Perryman results include the impacts in each state from pipeline expenditures in other states. In particular, the very large impacts estimated for Texas likely reflect an assumption that this state will provide substantial amounts of inputs for the pipeline construction in other states. Thus, by including Phase 2 and increasing overall project costs by more than 20%, the Perryman study has also increased the employment estimated in Texas and all other states.

A reasonable estimate would be that the Perryman study results are in the order of 20% higher owing to the inclusion of Phase 2 costs. And this helps to explain why the Perryman results are so high relative to what would reasonably be expected for a pipeline project with the costs and characteristics of KXL.

In conclusion, the industry's claim that KXL will create 119,000 total jobs (direct, indirect, and induced) jobs is based on a flawed and poorly documented study, which fails to apply its own standards for conducting a quality job study. Most notably, Perryman wrongly includes over $1 billion in spending and over 20,000 person-years of employment for a section of the Keystone project in Kansas and Oklahoma that is not part of KXL and has already been built.

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49 http://www.transcanada.com/docs/Key_Projects/Perryman_Group_Nebraska_Report.pdf, pp. 4, 9; http://www.transcanada.com/docs/Key_Projects/perryman_group_kansas_report.pdf, p. 4, 8; http://www.transcanada.com/docs/Key_Projects/perryman_group_oklahoma_report.pdf, p. 4, 9

50 Perryman Keystone XL, 2010, op. cit. pp. 10-11, 24.

51 As explained in footnote 46 , the KXL project does include the addition of two pump stations in Kansas along the existing Phase 2 pipeline. Given the paucity of documentation in the Perryman study, it is not possible to determine how these two pump stations have been accounted for. But in any event, the cost of these two pump stations would be small relative to the $1.0 billion in capital costs assumed by the Perryman study for Kansas.

52 Perryman Keystone XL, 2010, op. cit. pp. 10-11, 24.

TOTAL (DIRECT, INDIRECT, AND INDUCED) JOBS FROM KEYSTONE XL

As discussed above, the state-level reports accompanying the main Perryman study indicate that the Perryman study assumes total project capital costs of $6.6 billion.[53] On this basis, the Perryman results can be now be expressed as a multiplier. The Perryman study total employment impacts for project construction and development (119,000 person-years) are equivalent to 18.1 person-years of employment per $1 million of project capital cost.[54]

The Keystone XL Job Analysis Chart-Higher Estimate: Perryman Multiplier provides a graphic illustration of how the Perryman Muliplier (18 person-years per $1 million) is applied to Keystone US budgets ranging from $6.6 billon (Phase 2 + KXL) to the more relevant $3 to $4 billion.

It cannot be ruled out that a pipeline construction project could result in total job impacts approaching 18 person-years per $1 million. But given the nature of pipeline projects in general, and the specific characteristics of the KXL project, a lower multiplier should be assumed for evaluating the KXL project employment impacts. In the context of the current briefing paper, it is not practical to undertake a full independent analysis of KXL job impacts.

Fortunately, the job projections submitted by developers of other major pipeline projects provide a useful guide for estimating potential impacts for KXL.[55] On this basis, for the purposes of estimating total employment impacts, it is reasonable to assume a multiplier of approximately 11 person-years per $1 million pipeline project capital costs. So for the KXL total US capital costs ($5.4 billion), total employment impacts would be in the order of 59,000 person-years, or 64% lower than the results estimated by the Perryman study.

The Keystone XL Job Analysis Chart-Lower Estimate: Independent Assessment Multiplier provides a graphic illustration of how the Independent Assessment Multiplier is applied to KXL US budgets ranging from $5.4 billon (KXL) to the more relevant $3 to $4 billion.

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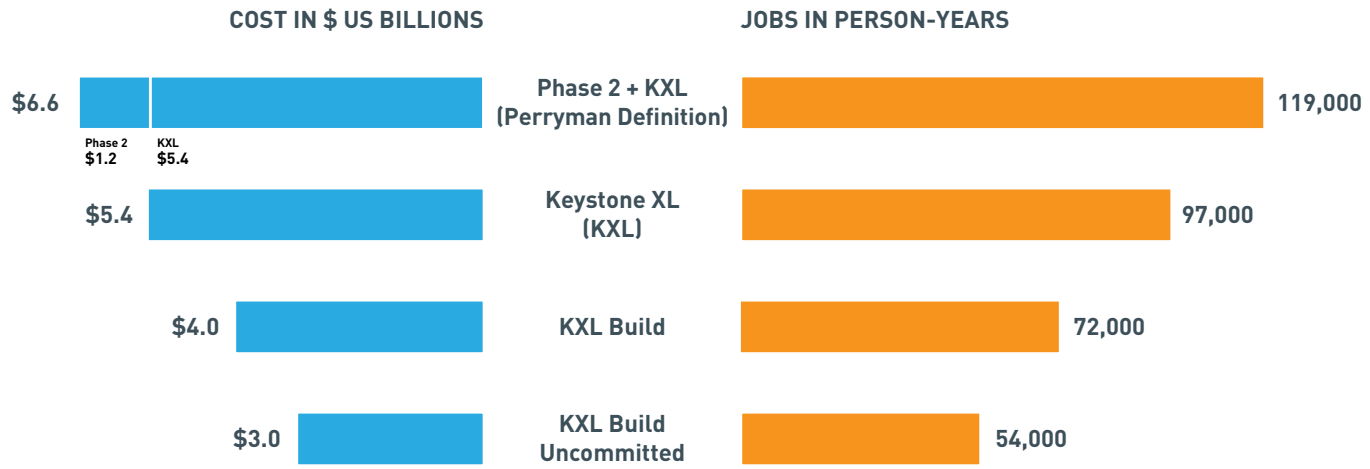
53 See footnote 49.

54 Monetary results in the Perryman study are typically expressed in terms of constant 2009 dollars. Given the paucity of documentation, it is unclear whether the project capital cost data presented in the Perryman study state-level reports are also in terms of constant 2009 dollars. Given the approximate nature of this analysis and currently very low inflation rates, a reasonable working assumption is that these cost data (and the resulting multiplier) are in 2009 dollars.

55 In Canada, the National Energy Board regulates all aspects of major oil pipeline construction and operations, but there is no similar comprehensive federal regulation for US pipelines. Job projections considering a broad range of economic spin-offs are thus more commonly prepared for major oil pipeline projects in Canada. For example, see the analyses submitted for the Enbridge Northern Gateway Project (Volume 6C: Environmental and Socio-Economic Assessment (ESA)-Human Environment, Section 4: Socio-Economic Conditions), https://www.neb.gc.ca/ll-eng/livelink.exe/fetch/2000/90464/90552/384192/620327/624798/620129/B3-16_-_Vol_6C_–_Gateway_Application_–_Human_Environment_ESA_(Part_1_of_3)_-_A1T0G6_.pdf?nodeid=620083&vernum=0 and Alberta Clipper Project (Volume II, Appendix III: Economic Effects of Enbridge Pipeline Inc.'s Alberta Clipper Project, April 2007). https://www.neb-one.gc.ca/ll-eng/livelink.exe?func=ll&objId=465077&objAction=Open

KEYSTONE XL JOB ANALYSIS: HIGHER ESTIMATE
PERRYMAN MULTIPLIER (18 PERSON-YEARS PER $1 MILLION)



This independent estimate of potential job impacts for KXL is lower than that estimated by Perryman for two major reasons. First, the KXL project spending assumed is $5.4 billion (the actual budget for the project in the US), rather than the $6.6 billion figure assumed in the Perryman study (with Keystone Phase 2 added in). Second, in this independent estimate, the multiplier assumed is approximately 11 person-years per $1 million capital costs, rather than the approximately 18 person-years per $1 million estimated by the

The Perryman study claims to incorporate a broad range of economic spin-offs, but does not provide any clear breakdown of direct, indirect, and induced jobs. The Enbridge analyses provide results separately for direct and indirect jobs. The Northern Gateway analysis also provides results for induced jobs.

For direct, indirect, and induced jobs, the multiplier estimated in the Northern Gateway analysis is dramatically lower than that estimated in the Perryman study: 11.3 vs. 18.1 person-years per $1 million pipeline project costs (Northern Gateway Q4 2009 Canadian $; Perryman assumed to be 2009 US $, see footnote 54). For direct and indirect jobs, the multipliers estimated by the Northern Gateway and Alberta Clipper analyses are roughly similar: 6.5 vs. 7.8 person-years per $1 million pipeline project costs (Northern Gateway Q4 2009 Canadian $; Alberta Clipper 2007 Canadian $).

The Enbridge analyses estimate impacts within Canada for expenditures to build pipelines in Canada. The economies in Canada and the US are in many ways similar, with the exchange rate for the two currencies typically close to parity in recent years. Canada has a high level of oil (and gas) pipeline construction activity, with a very strong domestic supply chain for this activity.

All else being equal, a project with a higher share of domestic content will have higher employment impacts than would a project with more imported content. The Enbridge analyses assume a higher level of domestic content than would be appropriate for an analysis of KXL US expenditures. The Alberta Clipper analysis assumes that 98% of all project expenditures will be spent in Canada, and the Northern Gateway analysis assumes 100% domestic procurement for steel line pipe. Meanwhile, as discussed in previous sections of this report, a large portion of KXL US inputs would be imported, including steel from India and Canada. By itself, the higher share of domestic content would likely result in higher multipliers for these Canadian pipelines (as compared with KXL US).

On the other hand, the overall economy is much smaller in Canada than in the US. And projects in smaller economies can have lower employment multipliers than projects in larger economies. But in fact, the scope of the Enbridge analyses is large enough to capture the relevant economic spin-offs and employment impacts. As noted above, there is a very strong supply chain within Canada, and a high level of domestic sourcing for pipeline projects. The Enbridge analyses consider impacts across Canada, so have a broad economic and geographic scope. Moreover, the Northern Gateway analysis includes induced jobs from respending of labor income and tax revenues, so is directly comparable to the Perryman study.

Therefore, on balance, the analyses submitted by Enbridge for Northern Gateway and Alberta Clipper provide a useful guide for estimating KXL employment impacts. If anything, the employment multipliers estimated in these analyses (which assume a very high level of domestic content) may somewhat overstate potential impacts for KXL US expenditures (even if they are made in a larger economy). The employment multipliers estimated for Northern Gateway and Alberta Clipper are also broadly similar to the results for US energy projects with characteristics similar to KXL (small on-site labor requirements, inputs weighted towards high capital and low labor content, as well as sizable imported content).

Perryman study. Given the opaque nature of the Perryman model and the absence of any disclosure regarding the TransCanada expenditure and sourcing data utilized by Perryman, it is impossible to determine why the Perryman results are so high.[56] By contrast, analyses based on higher quality studies and standard economic models estimate multipliers substantially lower than those assumed by Perryman. Hence, an alternative approach (i.e., using an independent assessment multiplier), yielding lower job estimates, is a much more reliable guide for evaluation and policymaking in regard to the KXL project.

The Perryman study's findings cannot be relied upon because there is no way of knowing how they were arrived at. The Perryman study is based on a proprietary economic analysis model.[57] There is basically no disclosure of the data that were input into the model, nor a useful level of detail as to how the outputs were determined. This does not allow for any meaningful independent review or validation of the Perryman findings. The results from the Perryman study do not usefully inform serious public debate concerning the KXL project and should be disregarded.

With the proper context now provided, it is possible to present estimates of job impacts that are relevant for the actual decisions that need to be made concerning the KXL project. The job estimate developed above (approximately 59,000 person-years of total employment impacts) is based on the KXL total US capital costs ($5.4 billion). But as discussed above (in the KXL Budget section), a very substantial part of the KXL budget is already spent, and another major portion is already committed.

So in evaluating the impacts of KXL construction, it is now relevant to evaluate only the uncommitted jobs associated with building KXL. Money already spent is sunk costs and any associated jobs have already happened (or soon will happen) regardless of whether KXL is built. Likewise, to the extent KXL costs are already committed and not avoidable, the jobs associated with these costs will occur in any event.[58]

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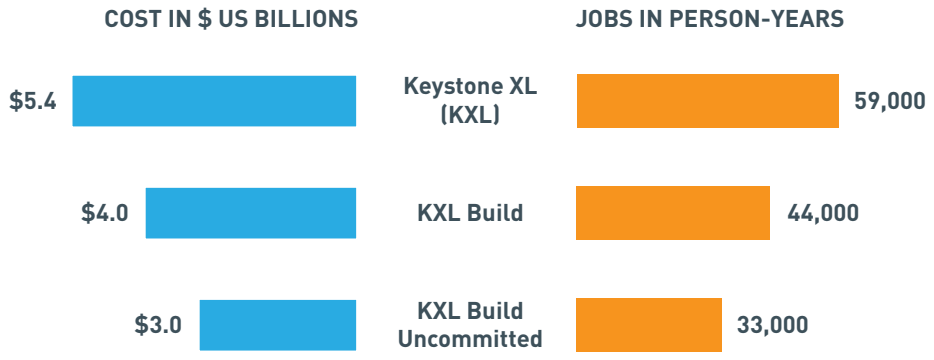
56 One possibility is that the Perryman results for project construction also include impacts relating to project operations. The Perryman study is so opaque that it cannot be readily determined what types and amount of project expenditures were assumed in calculating the overall results. In particular, the Perryman study estimates a substantial amount of overall employments impacts (118,925 person-years) associated with project construction and development. But it cannot be determined what these results are based on in terms of project costs for construction and operations. This failure to clearly distinguish between project constructions and operations was also noted in the review of the Perryman study as part of the FEIS (Socioeconomics, op.cit. Section 3.10-80-3.10-81).

57 The Perryman model, christened the US Multi-Regional Impact Assessment System (USMRIAS), is opaque. Perryman claims that the model "was developed and is maintained by The Perryman Group. This model has been used in hundreds of diverse applications across the country and has an excellent reputation for accuracy and credibility. In addition, the model has been in operation and continually updated for over two decades." The Perryman Group, The Economic and Fiscal Effects of Expanding Alcoholic Beverage Sales in the City of Dallas, July 2010. http://www.scribd.com/doc/34378516/The-Economic-and-Fiscal-Effects-of-Expanding-Alcoholic-Beverage-Sales-in-the-City-of-Dallas This is not a verifiable claim.

58 In practice, there would be a variety of considerations in determining the job impacts associated with project costs that are committed, but not yet spent. If in fact the committed expense will be incurred regardless of whether the project is constructed, then it might be fully appropriate to consider any job impacts from the committed expense as a constant that need not be taken into account. Put more simply, if the jobs will happen in any event, they should not be a factor in evaluating whether to proceed with construction. On the other hand, in the event that KXL is not constructed, TransCanada would presumably seek to minimize costs by attempting to renegotiate commitments, as well as by reusing or reselling whatever was being obtained via the commitments. So it is conceivable that some material intended for use in KXL would then be repurposed for other projects and that would serve to reduce future procurement and associated jobs.

KEYSTONE XL JOB ANALYSIS: LOWER ESTIMATE

INDEPENDENT ASSESSMENT MULTIPLIER (11 PERSON-YEARS PER $1 MILLION)



Thus, the incremental US spending associated with KXL project construction is only about $3 to $4 billion. Given a multiplier of 11 person-years per $1 million, this translates into total employment impacts of 33,000 to 44,000 person-years.[59] So a reasonable estimate of the total incremental US jobs from KXL construction is about one-third of the figure estimated in the Perryman study and used by industry to advocate for the construction of KXL.

Moreover, any job impacts associated with KXL construction would be spread over 2 and more likely 3 years.[60] So the annual impacts are at most about 22,000 person-years of employment per year, for two years.[61] But the annual impacts could also be as low as 11,000 person-years per year, for three years.[62]

Either way, the potential job impacts associated with KXL construction are quite small, both absolutely and certainly relative to the employment levels estimated by the Perryman study. In comparing these results with those from the Perryman study, it is useful to keep in mind that even results based on the Perryman study would be much lower, once they are adjusted for more realistic project cost assumptions.

Starting with the Perryman study total employment estimated for project construction (119,000 person-years), the Perryman results can be adjusted for more realistic project cost assumptions. Also starting with the $6.6 billion in project costs assumed by Perryman,[63] and adjusting for the $5.4 billion project cost for KXL in the US, the adjusted Perryman result is about 97,000 person-years. Next, instead of assuming a $4 billion KXL US project cost not yet spent, the adjusted Perryman result drops to about 72,000

59 Approximately $3 to $4 billion x 11 person-years per $1 million = 33,000-44,000.

60 The construction period for KXL would be at least 2 years and possibly longer. Moreover, there will be some time lags for effects to ripple through the economy. And much of the total employment impacts being estimated are for these ripple effects (indirect and induced jobs), as opposed to the direct on-site construction labor whose timing is tied to the actual construction. So even if KXL construction proceeds on a highly accelerated and compressed schedule, associated employment impacts will be spread over at least 2 years. And a scenario where job impacts are spread over at least 3 years is more realistic.

61 See footnote 59.

62 See footnote 59.

63 See footnote 48.

person-years. And finally, assuming a $3 billion KXL US cost not yet spent or committed, the adjusted Perryman results drops again to 54,000 person-years.

So even if it is assumed the Perryman study provides a reasonable estimate of job impacts per dollar spent on pipeline construction (i.e. 18 person-years per $1 million), total job impact will be much lower than the Perryman results once a more realistic budget is assumed for project construction. And whatever is estimated for total employment impacts, it must be spread over the relevant period in order to meaningfully estimate annual impacts. For KXL construction, the relevant period is at least two and perhaps more likely three years.[64]

In this context, it is also important to consider that almost all of the jobs (direct, indirect and induced) associated with Keystone XL will, of course, also be temporary. The operating costs for KXL are very minimal, and based on the figures provided by TransCanada for the Canadian section of the pipeline, the new permanent US pipeline jobs number at most 127. [65] The other operating expenditures (for materials, supplies, services, electric power, property taxes, etc.) would comprise the bulk of operating expenses and would also have some job impacts. So considering a broad range of spin-offs, operating expenditures would have job impacts in the order of around 1,000 per year.[66]

It is unfortunate that the numbers generated by TransCanada, the industry, and the Perryman study have been subject to so little scrutiny, because they clearly inflate the projections for the numbers of direct, indirect, and long-term induced jobs that KXL might expect to create. What is being offered by the proponents is advocacy to build support for KXL, rather than serious research aimed to inform public debate and responsible decision making. By repeating inflated numbers, the supporters of KXL approval are doing an injustice to the American public in that expectations are raised for jobs that simply cannot be met. These numbers—hundreds of thousands of jobs!—then get packaged as if KXL were a major jobs program capable of registering some kind of significant impact on unemployment levels and the overall economy. This is plainly untrue.

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64 See footnote 60.

65 Calculated based on information provided by TransCanada to the National Energy Board that approximately 327 miles of KXL pipeline would create 20 to 30 permanent jobs in Canada. The US section of the Keystone XL is 1,384 miles or 4.23 times the length of the Canadian section. Source: FEIS, op.cit. Volume 1, Introduction, Page.1-2, http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf/04_KXL_FEIS_Sec_1.0_Introduction.pdf?OpenFileResource. Based on these distances, new permanent pipeline maintenance jobs in the US are estimated to be between 85 and 127. 85= 20*4.23. 127 = 30*4.23. Source: National Energy Board Hearing OH-1-2009 on Keystone XL Pipeline on September 18, 2009, line 4819. https://www.neb-one.gc.ca/ll-eng/livelink.exe?func=ll&objId=570857&objAction=Open. The FEIS gives an even lower figure of 20 permanent operational jobs for KXL US. Source: FEIS (Socioeconomics, op.cit. Section 3.10-79, 80, 90). Correction from original September 2011 document.

66 Pipeline operating costs, such as electric power supply for pump stations, generally have relatively small job impacts. Operating costs include property and other taxes. Depending upon the amount of taxes assumed and the modeling of impacts associated with taxes, job impacts for pipeline operating expenditures could be somewhat higher or lower than the estimate provided. As discussed in the remainder of this paper, the adverse impacts associated with KXL could be very sizable and more than offset any benefits in terms of tax revenues.

KXL WILL HAVE MINOR IMPACT ON UNEMPLOYMENT LEVELS

When the direct, indirect and induced jobs created by KXL are examined in the light of the US economy as a whole, claims that Keystone XL will be both a major source of jobs and play an important role in putting unemployed Americans back to work are misleading. According to Perryman, the lion's share of state-by-state employment estimated for KXL will go to Texas (over 40%) and the other states will gain small numbers of construction jobs.[67] Based on the current unemployment rates for the pipeline states, these jobs could have a small impact on local unemployment levels. Using Perryman's own numbers, we calculate an average reduction in the levels of pipeline state unemployment of under 0.2%—a very modest reduction indeed.

None of this alters the fact that, even if Perryman's total job figures (119,000) were correct, and all the workers expected to be hired in the next phase of the project were hired tomorrow (so roughly 40,000 for three years), the US unemployment would remain where it is today—at 9.1 per cent.[68] The US economy needs to create more than 90,000 jobs per month just to keep up with the growing labor force.[69] It needs to generate 8 million jobs in order the get the US unemployment down to where it was at the onset of the recession.[70] And while it is true that construction and manufacturing have been hit hard by the 2008 recession, these are areas of the economy that have reduced unemployment substantially over the past 12 months. In August 2011 the unemployment level for construction workers was 13.5%, down from 17.0% a year ago. Manufacturing unemployment had also fallen to 8.9%, slightly below the 9.1% average for the workforce as a whole.[71] In an economy that has lost millions of jobs since the onset of the recession in 2008, KXL jobs amount to a tiny drop in a very deep bucket.

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67 Perryman, op. cit, p. 24. Also see: http://www.transcanada.com/docs/Key_Projects/perryman_group_texas_report.pdf, p.2.

68 This calculation is based on Bureau of Labor Statistics (BLS) data for August 2011. See: *Employment Situation*, August 2011. http://www.bls.gov/news.release/pdf/empsit.pdf

69 Baker, Dean. "Zero Job Growth in August, as Unemployment Rate Remains Stable," Center for Economic and Policy Research, September 2, 2011. http://www.cepr.net/index.php/data-bytes/jobs-bytes/zero-job-growth-in-august-as-unemployment-rate-remains-stable

70 Fieldhouse, Andrew and Irons, John. "More Economic Support is Desperately Needed, Economic Policy Institute," June 23, 2011. http://www.epi.org/publication/more_economic_support_is_desperately_needed/; calculated using BLS data from November 2007 and August 2011.

71 BLS, op.cit.

FOUR WAYS KEYSTONE XL COULD BE A JOB KILLER

The industry-generated jobs data are highly questionable and ultimately misleading. But this is only part of the problem. These industry-generated data attempt only to tell the positive side of the KXL jobs story. There is evidence to suggest that the effects of KXL construction could very well lead to more jobs being lost than are created. In this section, we show four ways that jobs can be destroyed or prevented by KXL—higher petroleum prices, environmental damage such as spills, the impact of emissions on health and climate instability, and the chilling effect KXL approval could have on the emerging green economy.

HIGHER FUEL PRICES IN 15 STATES

According to TransCanada, KXL will increase the price of heavy crude oil in the Midwest by almost $2 to $4 billion annually, and escalating for several years.[72] It will do this by diverting major volumes of Tar Sands oil now supplying the Midwest refineries, so it can be sold at higher prices to the Gulf Coast and export markets. As a result, consumers in the Midwest could be paying 10 to 20 cents more per gallon for gasoline and diesel fuel, adding up to $5 billion to the annual US fuel bill.[73] Further, the KXL pipeline will do nothing to insulate the US from oil price volatility.[74]

Even one year of fuel price increases as a result of KXL could cancel out some or all of the jobs created by KXL, based on the (more accurate) $3 to 4 billion budget for KXL (the remaining cost to build within the US). Higher fuel prices due to KXL would have broad adverse impacts. Gasoline is a significant cost for most Americans, and especially for those with lower incomes and/or residing in rural areas. Moreover, refined oil products (notably gasoline and diesel) are very widely used throughout the economy (especially in agriculture and commercial transportation). So higher fuel prices due to KXL would ripple through the economy and impact a very broad range of people and businesses.

The benefits of KXL construction and operations would be narrowly concentrated. A relatively small number of workers and businesses would be directly involved in providing

72 National Energy Board (Canada), Reasons for Decision, TransCanada Keystone Pipeline GP Ltd, OH-1-2009, March 2010 https://www.neb-one.gc.ca/ll-eng/livelink.exe?func=ll&objId=604441&objAction=browse pp. 21-22; Verleger, Philip. "If gas prices go up further, blame Canada," Star Tribune. March 13, 2011. http://www.startribune.com/opinion/otherviews/117832183.html

See also: Philip K. Verleger, Jr. "The Tar Sands Road to China: The Long, Tortured Route from Alberta to Dalian." The Petroleum Economics Monthly, February 2011 http://www.pkverlegerllc.com/publications/the-petroleum-economics-monthly/the-tar-sands-road-to-china-the-long-tortured-route-from-alberta-to-dalian-february-2011-17/; http://stopbigoilripoffs.com/documents/tar-sands-road-to-china/at_download/file.

See also: Press Release of Senator Ron Wyden, (D-OR) "Wyden Calls for Federal Trade Commission Investigation into Secret Agreements to Drive Up Tar Sand Oil Prices , Canadian Companies Have Agreements to Build Pipeline Bypassing Midwest Oil Refineries to Drive Up Prices" April 6, 2011. Wyden writes: "According to TransCanada, the proposed Keystone XL pipeline can be used by Canadian oil shippers to add up to $4 billion to U.S. fuel costs." Press release and scanned letter to FTC available at: http://wyden.senate.gov/newsroom/press/release/?id=158ffa9a-6380-4c2a-bbec-180c16839018.

73 Verleger, Philip. "The Tar Sands Road to China," op. cit.

74 ibid.

labor and other inputs to pipeline construction and operations. Likewise, the other potential costs and benefits from KXL would not be shared equally across US regions and states. In particular, the Midwest region could be a loser due to KXL, while the Gulf Coast (and particularly Texas) could be a winner.

The impact of higher Midwest fuel prices due to KXL would be concentrated in that region. But there will certainly be some spillover of effects to other regions, especially since the Midwest is a large region with strong economic linkages to other areas of the US. KXL would deliver Tar Sands output (and other crude oil) to the Gulf Coast. In contrast to potential impacts in the Midwest oil market, KXL is less likely to increase Gulf Coast fuel prices and could even lead to somewhat lower prices. Overall, the potential costs and benefits from KXL would not be shared equally. Higher fuel prices due to KXL would result in a broad set of losers, while KXL construction and operations would mainly benefit a much narrower group of winners.

JOBS LOST THROUGH ENVIRONMENTAL DAMAGE

The industry has ignored or dismissed fears that the KXL pipeline will have a serious impact on our environment through inland spills or spills into fresh water supplies (principally the Ogallala Aquifer) or through increases in greenhouse gas emissions (GHGs) and other forms of pollution. In so doing, it has no need to acknowledge that environmental damage is invariably a job killer. Cleaning up spills and other environmental damage may create some jobs, but only at the expense of jobs in other parts of the economy.

THE COST OF OIL SPILLS

The economic and non-economic damage caused by oil spills are given scant attention by TransCanada or supporters of KXL. But they need to be considered as part of the hefty price our economy and our environment would have to pay if KXL is constructed. In 2010, pipeline spills and explosions in the US killed 22 people, released more than 170,000 barrels of petroleum, and caused $1 billion dollars in damage.[75] The history of other pipelines indicates that spills from KXL are inevitable. Over thirty spills have occurred with the Keystone pipeline (Phase 1 and 2) in its first year of operation in Canada and the United States.[76] According to the State Department's FEIS, Keystone has experienced 14 leaks on US territory in just its first year of operation.[77] This is despite the fact that the Keystone pipeline was described as meeting or exceeding "world-class safety and environmental standards."[78]

Concerns generated by the actual spill history of Keystone and similar pipelines are further reinforced by an independent study conducted by Dr. John S. Stansbury of the University of Nebraska. Stansbury's study examined the likely frequency, magnitude and consequences of spills from KXL. It concluded that TranCanada's claim that spills would be rare—just 11

75 PHMSA Pipeline Safety Program website (viewed 9.27.11) http://primis.phmsa.dot.gov/comm/reports/safety/PSI.html

76 http://primis.phmsa.dot.gov/comm/reports/safety/PSI.html, Natural Resources Defense Council, Sierra Club, Oil Change, International, Dakota Resource Council, September 2011, "The Keystone XL Tar Sands Pipeline Is Not in the National Interest."

77 FEIS, Section 3.01-103. See also US Department of Transportation, Pipeline and Hazardous Materials Safety Administration. Corrective Action Order, CPF No. 3-2011-5006H. June 3, 2011. http://blog.nwf.org/wildlifepromise/files/2011/06/320115006H_CAO_06032011.pdf

78 Think Progress, "After 12 Oil Spills in One Year, TransCanada Says Proposed Keystone XL Pipeline will be Safest in US," August 17, 2011 citing http://thinkprogress.org/romm/2011/08/17/297576/oil-spills-transcanadakeystone-xl-pipeline/. See also: Natural Resources Defense Council, Sierra Club, Oil Change,International, Dakota Resource Council September 2011, "The Keystone XL Tar Sands Pipeline Is Not in the National Interest"

significant spills over a 50 year period—was not consistent with the available historical data pertaining to pipeline spills (which point to a much higher spill rate). Moreover:

> (A) more realistic assessment of expected frequency of significant spills is 0.00109 spills per year per mile (from the historical data (PHMSA, 2009)) resulting in 91 major spills over a 50 year design life of the pipeline. [79]

Concerns regarding spills could be even further heightened by the fact that TransCanada is contracting with a company (Welspun) that has been found to produce substandard steel.[80] TransCanada used imported Welspun steel for Phase 1 of the Keystone project and, as noted above, the pipeline has had 14 spills in its first year of operation. Prior to building Phase 1, TransCanada assured landowners and government officials that a spill would only occur once every 20 years. The latest leaks in Keystone Phase 1 spurred the PHMSA to order a shut down of the pipeline until a "corrective action order" was addressed. PHMSA ordered this "corrective action order" due to pipe expansions it had detected. Pipe expansions occur when low strength, low integrity, or poor quality steel is used. Under normal circumstances, it takes about 46 years of use before pipe expansions occur. [81]

Welspun's use of substandard steel has also been an issue in other pipeline projects. Welspun is currently being sued by two Kinder Morgan Energy Partner subsidiaries for fraudulent sales practices and the sale of defective steel pipe.[82] PHMSA has ordered Boardwalk Pipeline Partners and Kinder Morgan Energy Partner to replace hundreds of pipe joints along their pipelines after an investigation revealed numerous "expansion anomalies" indicating the use of low quality steel. Approximately 80 percent of the steel Boardwalk Pipeline Partners and Kinder Morgan Energy Partner used in their pipelines was purchased from Welspun.[83]

Certainly, the environmental damage of a "worst case scenario" spill from KXL would be very extensive, particularly affecting Midwest residents' livelihoods in agriculture, tourism, and many other economic sectors. Stansbury's study notes, "(T)he benzene released by a Keystone XL worst-case spill to groundwater in the Sandhills region of Nebraska would be sufficient to contaminate 4.9 billion gallons of water at concentrations exceeding the safe drinking water levels." Such a spill "would pose serious health risks to people using that groundwater for drinking water and irrigation." [84]

Pipeline spills are also known to carry with them a hefty price tag. Cleaning up spills creates jobs, but few would maintain that this is a good way to fight unemployment. Moreover, the costs to the companies and to the public purse will simply divert money from other parts of the economy. For example, the costs of an 800,000 gallon oil spill (July 2010) into the Kalamazoo River from the Enbridge pipeline are expected to exceed

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79 Analysis of Frequency, Magnitude and Consequence of Worst Case Spills From the Proposed Keystone XL Pipeline John Stansbury, Ph.D., P.E. http://watercenter.unl.edu/downloads/2011-Worst-case-Keystone-spills-report.pdf

80 Plains Justice. Request for Investigation of Possible Use Of Substandard Steel in the Keystone Pipeline, June 28, 2010 Via Email. http://plainsjustice.org/files/Keystone_XL/Steel/Letter_re_TransCanada_Use_of_Substandard_Steel_2010-06-28.pdf.

81 Lefebvre, Ben. "US Tightens Scrutiny on TransCanada's Keystone Pipeline. Dow Jones Newswires," June 7, 2011. http://www.smartmoney.com/news/ON/?story=ON-20110607-000362&cid=1127

82 11th Judicial District Court of Harris County, Texas. No.2009–54103.

83 Stansbury, op cit, p. 2

84 Stansbury, op cit, p. 2

$500 million, excluding the costs of insurance payments and compensation.[85] And the clean-up operation itself has yet to be completed.[86] At the height of the Kalamazoo clean-up effort, more than 2,500 EPA, state, local and Enbridge personnel and contractors worked on cleanup efforts along 35 miles of impacted river and shoreline. Over one year later the EPA has more than 500 people deployed on cleanup efforts in the area.[87] In addition to the spill into the Kalamazoo, Enbridge spent an additional $45 million on costs related to a spill in Romeoville, Illinois, in September 2010. Enbridge's 2010 annual report states that the company lost $16 million in revenue from the transfer of oil while the pipelines were shut down. Both spill cleanups and pipeline repairs contributed to an overall operating loss of $24.7 million, according to the company's 2010 Annual Report.[88] According to the EPA, the July 2011 rupture at ExxonMobil's Silvertip oil pipeline spilled at least 1,000 barrels of crude oil into the Yellowstone River. More than 1,000 people were involved in cleaning up the spill, an effort that is estimated to cost $42.6 million.[89]

ECONOMIC COSTS RELATED TO AIR POLLUTION AND CARBON EMISSIONS

It is a well known fact that if emissions rise, air quality deteriorates, and health problems increase. Respiratory and other illnesses reduce both labor productivity and labor market participation, as well as the educational performance of those exposed to airborne particulates. Several studies have documented how the health impacts from oil-generated NOx, SOx, Hg and other air toxics are a serious drain on the US economy.[90] People who are sick underperform as workers and suffer economically. These negatives also ripple through the economy in the form of increased costs for health care and rehabilitation.

If constructed, KXL will clearly add to these health-related costs and social problems. KXL is part of an industry plan to make Port Arthur into an international refining hub, where heavy sour crude from tar sands is processed for export. The processing of tar sands crude emits more toxic chemicals than processing of conventional sweet crude, and this will take place in an area where residents are already exposed to high levels of pollution. High rates of asthma and cancer and other illnesses in the Port Arthur area act as a drain on the economy and cause suffering for thousands of residents.

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85 Zoe, Clark. "Oil Spill Cost Enbridge Energy 550 Million," Michigan Radio online. http://michiganradio.org/post/oil-spill-cost-enbridge-energy-550-million-2010

86 US Environmental Protection Agency website, EPA's Response to the Enbridge Oil Spill (Viewed 9.21.11). http://www.epa.gov/enbridgespill/index.html. According to the EPA, "After a year of extensive cleanup work in the Kalamazoo River system, the (EPA) has identified pockets of submerged oil in three areas covering approximately 200 acres that require cleanup."

87 US Environmental Protection Agency website, One Year Later: More Work Necessary to Clean Up Submerged Oil in Michigan's Kalamazoo River System (Viewed 9.21.11). http://epa.gov/enbridgespill/

88 Enbridge Corporation,Annual Report 2010, pp. 78, 92, 160-1. http://ar.enbridge.com/ar2010/assets/Downloads/2010_Enbridge-Inc-Annual-Report.pdf. Killian, Chris. "Enbridge plans 'accelerated' pipeline inspection process in 2011," mlive.com, April 6, 2011. http://www.mlive.com/news/kalamazoo/index.ssf/2011/04/enbridge_plans_accelerated_pip.html

89 National Geographic, op.cit.

90 National Research Council, "Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use," 2010, "Overall, we estimate that the aggregate national damages to health and other non-GWP effects would have been approximately $36.4 billion per year for the light-duty vehicle fleet in 2005; the addition of medium-duty and heavy-duty trucks and buses raises the aggregate estimate to approximately $56 billion. These estimates are probably conservative, as they do not fully account for the contribution of light-duty trucks to the aggregate damages..." http://www.nap.edu/catalog.php?record_id=12794. p. 209. See also: Paul R Epstein and Jesse Selber, "Oil: A Life Cycle Analysis of its Health and Environmental Impacts," Harvard Medical School Center for Health and the Global Environment; Harold M. Hubbard, "Real Cost of Energy," Scientific American, Volume 264, No. 4, April 1991, pp. 36-42.

Aside from the human and economic costs of increased emissions related to poor air quality, it is now widely accepted that rising emissions lead to climate instability and this, in turn, results in an increase in economy-damaging, extreme weather events.[91] As the Stern Review[92] made clear five years ago, if emissions continue to rise according to a "business as usual" scenario, climate change is likely to have an impact on the global economy equivalent to the combined effect of the two World Wars of the 20th Century and the Great Depression. According to Stern, as much as 20 percent of global GDP could be wiped out.

Extreme weather events are already having a serious impact on jobs and livelihoods in many parts of the world.[93] In 2011, killer tornados, droughts and forest fires, record-breaking temperatures and rainfall have wreaked havoc across the US. There are those who believe that these events have nothing to do with GHG emissions, but no one can deny that climate scientists have warned that rising emissions will lead to climate disruption, and climate disruption is today increasingly obvious. The damage caused by just one event—Hurricane Irene—has been estimated to exceed $7 billion.[94] The drought in

91 See: Intergovernmental Panel on Climate Change (IPCC). Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX). Summary for Policy Makers. "Economic losses from weather- and climate-related disasters have increased, but with large spatial and interannual variability...Global weather- and climate-related disaster losses reported over the last few decades reflect mainly monetized direct damages to assets, and are unequally distributed...Loss estimates are lower bound estimates because many impacts, such as loss of human lives, cultural heritage, and ecosystem services, are difficult to value and monetize, and thus they are poorly reflected in estimates of losses. Impacts on the informal or undocumented economy as well as indirect economic effects can be very important in some areas and sectors, but are generally not counted in reported estimates of losses." (Page 6) http://www.ipcc-wg2.gov/SREX/

92 Stern, Nicholas. (2006). "Stern Review on The Economics of Climate Change (pre-publication edition). Executive Summary". HM Treasury, London. Archived from the original on 2010-01-31. http://www.webcitation.org/5nCeyEYJr. Retrieved 2010-01

93 IPCC, op.cit.

94 Williams Walsh, Mary. "Irene Adds to a Bad Year for Insurance Industry," August 28, 2011. http://www.nytimes.com/2011/08/29/business/irene-damage-may-hit-7-billion-adding-to-insurer-woes.html?pagewanted=all

Texas—the worst one-year drought in the history of the state—has inflicted damage thus far totaling $5.2 billion.[95]

How will KXL increase the level of GHG emissions? Firstly, KXL is an important part of an industry plan to expand the oil industry's exploitation of dirty, unconventional high carbon fuels. This planned expansion will have a very serious impact on emissions levels. Indisputably, the energy used in the Tar Sands extraction process has already made a large contribution to Canada's CO_2 emissions.[96] Producing one barrel of oil from the Tar Sands produces three times the amount of GHGs produced from conventional oil, making the overall GHG lifecycle of a barrel of tar sands oil considerably higher than conventional oil.[97] KXL will connect the Tar Sands to heavy crude refineries in the Gulf and open the Tar Sands to more extraction to meet the rising global demand for oil. This will lead to more "upstream" GHG emissions in Alberta. Furthermore, emissions generated from the manufacture of more than 800,000 tons of steel for the KXL pipeline are also significant. As a rule of thumb, one ton of steel produces one ton of CO_2, which adds up to more than 800,000 tons of CO_2—more than the annual national emissions levels of scores of smaller countries.[98] And because Tar Sands oil is difficult to upgrade and refine, it will generate more emissions from refineries than regular crude oil. Lastly, if fully utilized, the KXL pipeline would add an additional 27 million metric tons of carbon dioxide equivalent (MMTCO2e) annually to emissions from average U.S crude.[99]

It is important to note that KXL is being proposed at a time when, given the scientific evidence, the public discourse should be about how to reduce emissions substantially. Slowing down the levels at which GHGs are being released into the atmosphere is simply not enough. US transport emissions presently total around 27 percent of national CO_2 emissions, and emissions from transport are growing faster than emissions from any other economic sector (this is true both globally and nationally).[100] The US will never be able to make the kind of emissions reductions that the scientific evidence suggest are necessary without aggressively tackling the rising levels of emissions from its transportation sector. If US transport emissions were viewed as a separate country, emissions from this sector would rank number four—behind China, the US and Russia. [101]

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95 Fernandez, Manny. "Sacrifices and Restrictions as Central Texas Town Copes With Drought," New York Times, September 6, 2011.http://www.nytimes.com/2011/09/07/us/07drought.html?_r=3&scp=4&sq=cost%20of%20texas%20fires&st=cse

96 Public Works and Government Services of Canada (PWGSC). Emissions Trends in Canada. July 2011 Canadian emissions rose roughly 20% between 1990 and 2005. Between 2005-2010, Canadian emissions from the oil and gas sector grew 46%. The PWGSC notes, "This increase is primarily driven by the growth in bitumen production, where emissions are expected to increase from 16 Mt in 2005 to about 52 Mt by 2020." http://www.ec.gc.ca/doc/publications/cc/COM1374/ec-com1374-en-s3.htm.

97 Weber, Bob. "Alberta's Oilsands: Well-managed Necessity or Ecological Disaster?" Moose Jaw Times Herald- Canada, December 2009. http://www.mjtimes.sk.ca/Canada---World/Business/2009-12-10/article-243834/Albertas-oilsands:-well-managed-necessity-or-ecological-disaster%3F/1

98 Dume, Belle, "Steel by-product could sequester carbon dioxide," Environmental Research Web, December 5, 2008. http://environmentalresearchweb.org/cws/article/news/36966. Rogers, Simon and Evans, Lisa."World carbon dioxide emissions data by country: China speeds ahead of the rest," The Guardian, January 31, 2011.http://www.guardian.co.uk/news/datablog/2011/jan/31/world-carbon-dioxide-emissions-country-data-co2

99 Environmental Protection Agency. Comments on Draft Environmental Impact Statement. July 16, 2010. http://yosemite.epa.gov/oeca/webeis.nsf/%28PDFView%29/20100126/$file/20100126.PDF?OpenElement

100 Environmental Protection Agency, Greenhouse Gas Emissions from Transportation http://www.epa.gov/oms/climate/basicinfo.htm

101 Union of Concerned Scientists, "Each Country's Share of CO2 Emissions. Information from EIA 2008. http://www.ucsusa.org/global_warming/science_and_impacts/science/each-countrys-share-of-co2.html

However, there are alternatives for transport and the economy as a whole. The President's own *Blueprint for a Clean Energy Future* describes how the US can reduce oil use by about 3.7 million barrels a day by 2025.[102] From the perspective of both job creation and environmental protection, this is a far better choice and consistent with the national interests of the US.

KEYSTONE XL'S IMPACT ON THE GREEN ECONOMY AND GREEN JOBS

It is also important to consider the jobs that may not be created as a result of KXL. Many believe its approval will likely have a chilling effect on those in the private sector and in public policy who have positioned themselves on the cutting edge of the green economy. Small business organizations such as the Green Chamber of Commerce and the Green Business Network (representing more than 5,000 enterprises) agree that KXL will impede progress toward green and sustainable economic renewal.[103] The level of green investments is also influenced by the degree of political will to reduce global warming pollution. The approval of KXL and an acceleration in the use of Tar Sands oil sends a clear and disturbing message: not only is Canada not serious about reaching its (already unachievable) Kyoto targets, but the US Administration is reneging on its stated commitment to provide leadership in the global effort to combat climate change.

The possibility of KXL construction amounts to a sword hanging over the prospects of a vibrant green economy and green jobs. The approval of the project will send a clear signal that North America will build its economic future economy on dirty fuel, and not on clean energy. The negative impact on jobs is potentially enormous. A string of studies have been released that point to the growth and future potential of green jobs and other economic and social dividends resulting from climate and environmental protection policies.[104] However, the prospect of green businesses flourishing in the future is to a large extent contingent upon how private investors and public officials interpret which way the economic winds are blowing. If the world's largest economy locks in a long-term dependence on fossil fuels—and exceptionally dirty fuels at that—then green investments (and therefore green jobs) will surely suffer.

Moreover, a recent study conducted by Political Economy Research Institute (PERI) at the University of Massachusetts concludes that oil generates barely one-fourth of the number of jobs created by green investments for the same amount of investment.[105] Green infrastructure programs create more jobs per dollar spent because they are less capital intensive, are more labor intensive, and stimulate domestic industries and services. A post-recession study conducted by the Brookings Institute, *Sizing the Clean Economy: A*

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102 White House, Blueprint for a Secure Energy Future, March 2011. http://www.whitehouse.gov/sites/default/files/blueprint_secure_energy_future.pdf

103 Letter from Green Chamber of Commerce to president Obama http://greenchamberofcommerce.net/2011/09/01/small-businesses-urge-president-to-reject-keystone-xl-pipeline/. See also Green Business Network http://greenbusinessnetwork.org/news/announcements/item/394-tell-president-obama-stop-the-tar-sands-oil-pipeline.html

104 United Nations Environment Program, Green Jobs: Towards Decent Work in a Sustainable Low Carbon World, September 2008. http://www.unep.org/labour_environment/features/greenjobs-report.asp. See also: EPI—Blue Green Alliance, Rebuilding Green: The American Recovery and Reinvestment Act and the Green Economy, 2011

105 Robert Pollin, Green Recovery: A Program to Create Good Jobs and Start Building a Low-Carbon Economy, University of Massachusetts Amherst PERI, September 2008. http://www.peri.umass.edu/green_recovery/

National and Regional Green Jobs Assessment,[106] details how today the clean economy employs 2.7 million American workers across a diverse group of industries. This figure is already greater than the number of people employed by the entire fossil fuel sector. In the past year clean-tech has outperformed the national rate of job creation by some distance. The clean economy also offers more opportunities and better pay (13 percent higher) for low- and middle-skilled workers than the national economy as a whole. [107]

106 Muro, Mark et al. Sizing the Clean Economy: A National and Regional Green Jobs Assessment, 2011. http://www.brookings.edu/reports/2011/0713_clean_economy.aspx

107 Muro op.cit

JOBS LOST IN CANADA

We have identified four ways by which KXL can threaten existing jobs or prevent the creation of new ones. However, there has been little discussion at all with regard to the impact KXL might have on Canadian jobs. The extraction of Tar Sands oil has generated 75,000 jobs in Alberta.[1] While these jobs are not all good jobs by any means, and they have brought with them a number of social problems and costs, the Tars Sands remains a large employer. Increased production from the Tar Sands will generate more jobs, but even here the picture is complicated by the fact that KXL will allow the upgrading and refining of Tar Sands oil to be "offshored" to the US and, in principle, even beyond the border of US

As recently as 2008, a dozen new or expansion "upgrader" projects were planned for the Fort McMurray and Industrial Heartland areas (just outside of Edmonton) of Alberta. The Industrial Heartland Association calculated that the 8 upgraders would create approximately 22,000 construction and 12,000 permanent jobs in the region.[2] These upgraders would not only provide much needed jobs in the region, but also lay the foundation for Alberta to manufacture refined petroleum products such as gasoline, diesel and petrochemicals, and thus retain much of the value added from Tar Sands production. While a few of these upgrader projects have gone forward, the vast majority of them were postponed or cancelled due to the global recession. The current and proposed pipelines to the US further reduce the likelihood that these upgraders will be built, as companies will now look to exporting Tar Sands oil to US upgraders and refineries. According to the Alberta Federation of Labour, "The size and number of these US refineries and American-bound pipelines is significant because it means that US oil refiners will have the capacity to absorb all expected increases in Alberta's oil sands production over the next 10 years."[3] Keystone XL will further eliminate the need for upgrading facilities in Alberta, thus ending the possibility of diversifying Alberta's energy economy and the thousands of potential construction and permanent jobs in those facilities.

1 Canadian Association of Petroleum Producers, Oil Sands Fact Book, June 2011. http://issuu.com/capp/docs/oilsands-factbook?mode=embed&layout=http%3A%2F%2Fskin.issuu.com%2Fv%2Flight%2Flayout.xml&showFlipBtn=true&autoFlip=true&autoFlipTime=6000

2 Alberta's Industrial Heartland Association, Presentation: Alberta's Industrial Heartland Oilsands 101 Update, June 23, 2007, p. 15-18; 31.

3 Alberta Federation of Labour, Lost Down the Pipeline, March 2009.

CONCLUSION: EMPLOYMENT POTENTIAL FROM KXL IS LITTLE TO NONE; DECISION SHOULD BE BASED ON OTHER FACTORS

Of this writing, TransCanada, the American Petroleum Institute, and other proponents of KXL are touting the job-creation potential of the pipeline. Jobs have thus become an important part of the case for Presidential approval of KXL. The data presented in this briefing paper should put this issue to rest. The industry's capacity to frame the KXL decision as a jobs issue has been amply demonstrated in recent months, but decision-makers should be absolutely clear that the industry's job numbers are not based on reliable research; not informed by past experience; and completely fail to consider the large number of jobs that could be endangered by the construction of KXL.

To highlight some of the main points made in this paper:

» The construction of KXL will create far fewer jobs in the US than its proponents have claimed and may actually destroy more jobs than it generates.

» The industry's US job claims, and even the State Department's analysis, are linked to a $7 billion KXL project budget. However, the budget for KXL that will have a bearing on US jobs figures is dramatically lower—only around $3 to $4 billion.

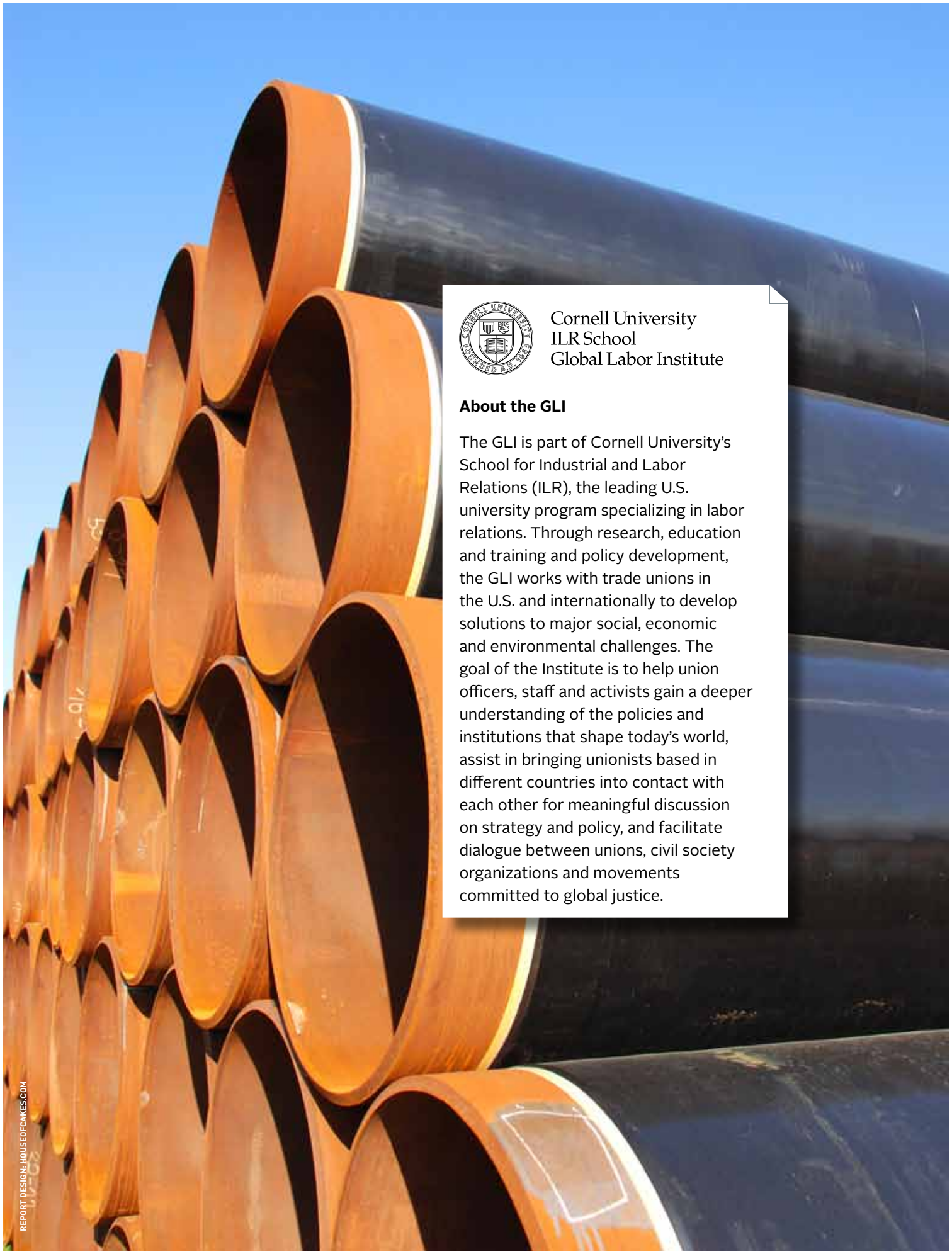
» The claim that KXL will create 20,000 direct construction and manufacturing jobs in the US is unsubstantiated. There is strong evidence to suggest that a large portion of the primary material input for KXL—steel pipe—will not even be produced in the US

» The industry's job projections fail to consider the large number of jobs that could be lost by construction of KXL. This includes jobs lost due to consumers in the Midwest paying 10 to 20 cents more per gallon of gasoline and diesel fuel. These additional costs ($2 to $4 billion) will suppress other spending and cost jobs. Furthermore, pipeline spills, pollution and increased greenhouse gas emissions incur significant human health and economic costs, thus eliminating jobs.

Put simply, KXL's job creation potential is relatively small, and could be completely outweighed by the project's potential to destroy jobs through rising fuel costs, spill damage and clean up operations, air pollution and increased GHG emissions.

As noted above, it is unfortunate that the numbers generated by TransCanada, the industry, and the Perryman study have been subject to so little scrutiny, because they clearly inflate the projections for the numbers of direct, indirect, and long-term induced jobs that KXL might expect to create. What is being offered by the proponents is advocacy to build support for KXL, rather than serious research aimed to inform public debate and responsible decision making. By repeating inflated job numbers, the supporters of KXL

approval are doing an injustice to the American public in that expectations are raised for jobs that simply cannot be met. These numbers—hundreds of thousands of jobs—then get packaged as if KXL were a major jobs program capable of registering some kind of significant impact on unemployment levels and the overall economy. This is plainly untrue.



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The GLI is part of Cornell University's School for Industrial and Labor Relations (ILR), the leading U.S. university program specializing in labor relations. Through research, education and training and policy development, the GLI works with trade unions in the U.S. and internationally to develop solutions to major social, economic and environmental challenges. The goal of the Institute is to help union officers, staff and activists gain a deeper understanding of the policies and institutions that shape today's world, assist in bringing unionists based in different countries into contact with each other for meaningful discussion on strategy and policy, and facilitate dialogue between unions, civil society organizations and movements committed to global justice.

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