GHG Footprint Assessment

[Updated on 22/2/2018]

Please consult the EIB Carbon Footprint Manual for guidance when completing the footprint calculation

Section 1

PROJECT INFORMATION	
Project	TRANS ADRIATIC PIPELINE
Operation n°	20140596

Section 2 - Absolute Emissions

SCOPE 1, 2 or 3 EMISSIONS (AS APPLICABLE)

Description of source	Activity data	Units/yr	Emissions factor* t CO2-eq/unit	Emissions kt CO2-eq/yr
Combustion	6338	TJ	56.1	355.6
Fugitive emissions	767	tCH4	21.0	16.1
				0.0
				0.0
				0.0
		(A)	**Absolute Emissions**	**371.7**

Description of source	Activity data	Units/yr	Emissions factor* t CO2-eq/unit	Emissions kt CO2-eq/yr
Fugitive emissions and venting from compressor stations, metering	732.1	tCH4	21.0	15.4
Fugitive emissions and venting from BVs	24.0	tCH4	21.0	0.5
Fugitive emissions and venting from pigging stations	5.6	tCH4	21.0	0.1
Fugitive emissions and venting from pipeline	5.0	tCH4	21.0	0.1

Section 3 - Baseline & Relative Emissions

BASELINE EMISSIONS

Description of source	Activity data	Units/yr	Emissions factor* t CO2-eq/unit	Emissions kt CO2-eq/yr
				0.0
				0.0
				0.0
				0.0
				0.0
		(B)	**Baseline Emissions**	**0.0**
		(A - B)	**Relative Emissions**	**0.0**

Section 3 - Alternative Absolute and Baseline Emissions

Alternative Section to be used only in consultation with your Division CFTF Representative

Description of source	Activity data	Units/yr	Emissions factor* t CO2-eq/unit	Emissions kt CO2-eq/yr
Absolute Emissions (as above)				371.7
SIGNIFICANT ABSOLUTE EMISSIONS OUTSIDE OF PROJECT BOUNDARY				
Combustion SD2+SCPX+TANAP	36582	TJ	56.1	2,052.3
Fugitive emissions SD2+SCPX+TANAP	4968	tCH4	21.0	104.3
Consumer's combustion	638400	TJ	56.1	35,814.2
				0.0

Description of source	Activity data	Units/yr	Emissions factor* t CO2-eq/unit	Emissions kt CO2-eq/yr
Combustion SD2	14082	TJ	56.1	790.0
Combustion SCPX	9672	TJ	56.1	542.6
Combustion TANAP	12829	TJ	56.1	719.7
Fugitive emissions and venting from SD2	847	tCH4	21.0	17.8

				0.0
		(A)	**With Project Emissions**	**38,342.5**
BASELINE EMISSIONS				
Alternative Combustion	42920	TJ	56.1	2,407.8
Alternative fugitive emissions	5734	tCH4	21.0	120.4
Consumer's combustion	638400	TJ	56.1	35,814.2
		(B)	**Without Project Emissions**	**38,342.5**
		(A - B)	**Relative Emissions**	**0.0**

Fugitive emissions and venting from SCPX	2290	tCH4	21.0	48.1
Fugitive emissions and venting from TANAP	1831	tCH4	21.0	38.4

Section 4

FOOTPRINT CALCULATION ASSUMPTIONS	*Assumptions are those taken by the EIB appraisal team; please indicate sources when different from those in the Carbon Footprint Methodology*
ABSOLUTE EMISSIONS EXPLANATION OF SCOPE 1, 2 & 3 EMISSIONS (IF APPLICABLE)	The project consists of construction of a 878 km pipeline across Greece, Albania and Italy, which will initially transport natural gas produced from Azerbiajan's Shah Deniz field. When fully operational and running at full capacity, it will transport 10 Gm3 of natural gas per annum to Europe. CO2 emissions from combustion of natural gas in the compressor stations are estimated to be 356 ktCO2/year. The total fugitive emissions are the sum of fugitive emissions from compressor stations, metering stations, valves, pigging stations, the receiving terminal and the pipeline.
RELATIVE EMISSIONS EXPLANATION OF OTHER SIGNIFICANT EMISSIONS AFFECTED BY THE PROJECT AND BASELINE CHOICE	Despite decreasing gas demand under a decarbonisation scenario, due to the faster decline of domestic gas production, imports to the EU will increase. Projects such as TAP will not serve any new demand. For meeting the incremental imports, the EU's gas pipelines to Russia, Norway and Algeria and LNG terminals have the necessary capacity. Therefore, in the absence of significant increases in gas production in Norway or Algeria, the baseline alternative to TAP is to increase imports of Russian gas and USA LNG. Russian imports can be delivered either via the existing transit route via Ukraine, or through the planned pipeline Nord Stream 2. Emissions from the Ukraine transit option are higher compared to TAP (due to the age and design of Ukraine's transmission system). Data for fuel use of future Nord Stream 2 pipeline is not available. However, the per unit fuel use for compression of Nord Steam 2 should be higher than TAP's because of the significantly higher design pressure. Thus, for both alternative options of Russian exports (Ukraine transit and Nord Stream 2), TAP's fuel use and relative emissions will be lower. Since exact fuel use of Nord Stream 2 is not known, the assumption taken here is that its relative emissions are at least as high as TAP's, and therefore the most conservative estimate of the relative emissions of the project compared to the baseline is assumed to be zero (rather than negative). USA LNG as an alternative incremental import might be more likely given the political decision to diversify away from Russian imports. However, emissions from importing the same amount of gas via LNG are by some estimates triple those of this project. Since there are uncertainties as to what the real baseline alternative to imports via TAP would be, the LNG option is omitted here. However, taking the LNG option as the baseline would result in a very high relative emission savings for the project. To summarise, the conservative approach taken here results in zero relative emissions. <u>Upstream and downstream emissions</u> Upstream and downstream emissions come from Shah Deniz 2 production, from the other pipelines of the corridor (Tanap, SCPx), and from the end use combustion. Emissions from upstream and from the pipelines were estimated from the projects' environmental impact assessments. Emissions from gas consumption is calculated using natural gas emission factor of 56.1 tCO2/TJ. As argued above, the alternative gas source to Shah Deniz 2 would be Russia's gas fields or US shale gas. Both alternatives have higher upstream emissions due to the age and state of Russian fields and the technology of shale gas production. However, to use a conservative baseline we assume the upstream emissions from alternative sources of natural gas are equal to those from Shah Deniz 2. Similarly, pipeline imports from the Ukraine's system or Nord stream 2 are alternatives to Tanap and SCPx, which both have higher emissions as explained above. Since TAP is going to supply the existing demand for gas in the EU, the alternative for the end use combustion of the 10 bcm will be combustion of the same amount of gas from other sources. In summary, with or without the project, gas supply and demand worldwide will not be significantly affected. The pipeline will however change the sources of gas supply to Europe. Therefore, under our conservative scenario, the relative emissions of the project are zero.
CARBON FOOTPRINT METHODOLOGY	**V 10.1**

Section 5

Update FOOTPRINT CALCULATION JUSTIFICATION after BoD of project		Previous Value	New Value
Date of Update	22/02/2018		
Who updated	EMH		
Absolute Emissions		476.3	371.7
Relative Emissions		0	0
Reason for Update	New data from the project promoter was used to update the emissions, and the footprint assumptions were clarified for outside readers.		
Reference documents if needed			