OXFORD ECONOMICS

The Economic Impact of the Trans-Adriatic Pipeline on Albania

A report for TAP AG

A report TAP AG

OXFORD ECONOMICS

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1 Executive Summary

If constructed, the Trans Adriatic Pipeline (TAP) will transport natural gas from the Turkish-Greek border through South Eastern Europe to its tie-in point near Lecce in Italy. In doing so, the project will enhance the security of Europe's energy sector by increasing the diversity of supply.

This report quantifies the economic impact of the proposed investment of the TAP on the Albanian economy. Headline results are presented for three key metrics (contribution to GDP, headcount employment (**including both part-time and full-time jobs**) and tax revenue raised) and three channels of impact (**direct** activity by TAP AG, **indirect** activity stimulated by supply chain purchases, and activity **induced** by the spending of employees). Together with these benefits, a number of "catalytic" or "spillover" effects are examined and, where possible, quantified. All monetary values are expressed in constant 2012 prices and hence can be viewed as based in "today's money".

Benefits from construction will peak in 2017…

- Construction of the pipeline is expected to take place between 2015-18. The direct impact of the project is projected to peak in 2017, at which point activity is expected to generate €57 million for Albanian GDP and create 4,200 jobs (part-time and full-time). In total, the construction phase of the project is forecast to generate €157 million in GDP and support 2,900 jobs (part-time and full-time) per year.

…with substantial business created for local suppliers…

- Due to commitments to outsource work where possible to local companies, we expect the indirect impact to be substantial. Our projections imply it will peak in 2017, creating an estimated €39 million in GDP and helping to support 4,400 jobs (part-time and full-time). In total, over four years, construction is expected to indirectly generate €110 million of GDP and support 3,100 jobs (part-time and full-time) per year.
- Moreover, further benefits will accrue via the spending of employees. We estimate that this will contribute €40 million to Albanian GDP in 2017 helping to support 5,800 jobs (part-time and full-time). For the entire construction period, these estimates rise to a €106 million contribution to GDP and the support of 3,900 jobs (part-time and full-time) per year.

Operational effects are smaller…

- Operation of the pipeline is set to commence in 2019. In comparison to the construction phase, the annual impact on the Albanian economy is expected to be smaller. We estimate that, in its first year, pipeline operation will contribute €7.6 million to GDP and create 190 jobs (part-time and full-time). A further €2.1 million and 260 jobs (part-time and full-time) will be supported by indirect and induced effects.

…but will persist for 50 years

- These operational effects are scheduled to continue for 50 years, providing a consistent boost to Albanian economic activity. In total, we estimate that the project's operational direct impact will contribute a cumulative €500 million to Albanian GDP over the operational horizon. An additional €243 million and will be supported via indirect and induced effects.

All this activity will boost the Albanian treasury

- This activity will raise revenue for the Albanian government. Reflecting the concentration of activity, the project's contribution to the treasury will peak in 2017 at €15 million, with a further €17 million raised via indirect and induced impacts. Table 1.1 contains a full summary of the results.

Table 1.1: Baseline Forecast of Economic Impact by Alternative Metrics[1]

Project's economic impact								
			Construction				Operation	
Impact	Metric	Unit	2015	2016	2017	2018	2019	Gross 50-year impact
Direct	GDP	€mns	27	54	57	19	8	500
	Employment	Jobs per year	1,900	3,900	4,200	1,400	190	190
	Wages	€mns	13	23	25	8	1.5	114
	Tax revenues	€mns	7	14	15	5	6	400
Indirect	GDP	€mns	21	37	39	13	1.5	175
	Employment	Jobs per year	2,300	4,200	4,400	1,500	180	180
	Wages	€mns	8	15	16	5	0.4	51
	Tax revenues	€mns	5	8	8	3	0.3	38
Induced	GDP	€mns	18	37	40	12	0.6	68
	Employment	Jobs per year	2,600	5,400	5,800	1,800	80	80
	Wages	€mns	6	13	15	4	0.2	25
	Tax revenues	€mns	4	8	9	3	0.1	15

Source: Oxford Economics/TAG AG/Albanian Institute of Statistics

Large spillover benefits are likely from associated investment in roads…

- As part of the project, TAP AG intends to invest €60 million in Albania's road infrastructure. We estimate that the value of "spillover" benefits from this investment is likely to fall between €237-€1,107 million over the proceeding 20 years. Evidence from other studies suggests that the true value is likely to be towards the higher end of this range.

…and via other channels

- Moreover, other potential spillover impacts have been identified. Principal among these is the potential for the project to lead to an enhanced availability

[1] Tax revenues generated are inclusive of taxes on labour and profits, VAT and direct payments made by TAP AG to the Albanian treasury.

of natural gas, which could help to ease the projected future increase in energy demand. Although, we have not attempted to formally quantify this benefit, there are solid grounds for believing that it will be substantial.

2 Introduction

This chapter will outline the aims and objectives of this report and define key terms that are used throughout the study. This should provide the reader with an indication of the framework of analysis, with additional detail, on the methodology, data sources and assumptions used, provided in later chapters.

2.1 Aims and Objectives

The aim of this report is to provide a robust assessment of the overall economic impact of the construction and operation of the TAP on the Albanian economy. Construction of the pipeline is expected to occur between 2015-18, with impacts estimated for each individual year. Operational activity is projected to continue for the subsequent 50 years (2019-68). Estimates presented in the paper rely on a combination of projected expenditure figures provided by TAP AG, quantified in September 2012, and the deployment of official data. The quantitative results of the impact study are all estimates and are not a confirmation of the final figures that TAP's investment will generate when in operation. For further details on the methodological approach, see chapter 3 of this report, with additional technical references provided in the Appendix (chapter 6).

2.2 Terminology

When reporting the results, the focus will be on three key metrics: contribution to GDP, jobs created; and contribution to the treasury. More detail on each is provided below:

- **Contribution to GDP:** captures the contribution to economy-wide output. Technically, this study quantifies this impact in terms of firms' Gross Value Added (GVA)[2]. The GVA of a firm is approximately equal to the sum of its gross wage bill and earnings before interest, tax and depreciation (EBITDA). We use the terms interchangeably in the remainder of the report.
- **Jobs (part-time and full-time):** refers to jobs created as a result of the economic activity analysed in this report. The number of jobs reported is on a "headcount" basis and therefore includes both full-time and part-time roles. When referring to employment impacts over a multi-year period, results are presented on a per year basis.
- **Contribution to the treasury:** refers to revenue raised for the government as a result of the economic activity analysed in this report. A range of taxes

[2] Technically GVA is equal to GDP less taxes (net of subsidies) on products. In practice, the discrepancy between the two is very small.

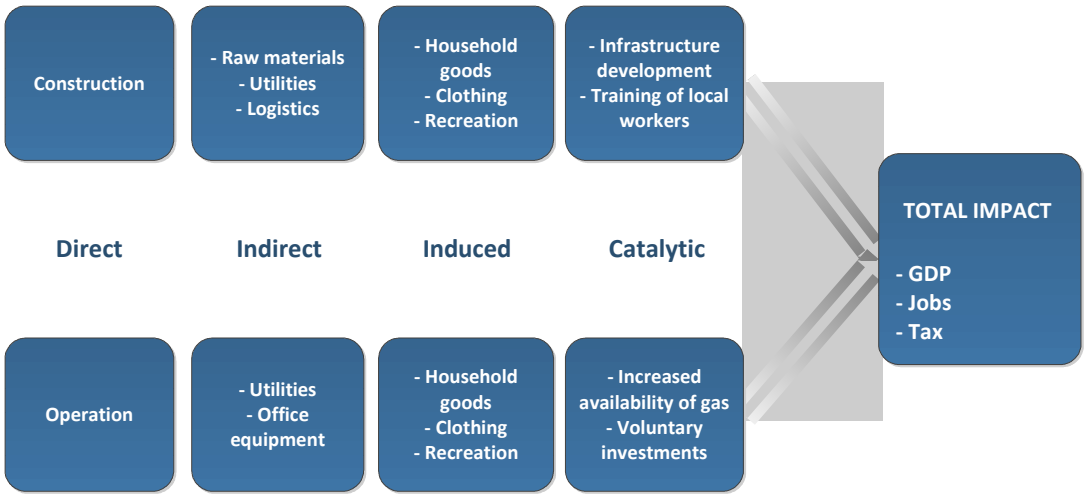
are modelled including employee income tax liabilities, employee/employer national insurance contributions, corporate tax receipts and VAT raised as a result of purchases by consumers.

All monetary figures presented are in Euros at constant 2012 prices and exchange rates. Hence they can viewed as based in "today's money". Adjustments to account for both inflation and exchange rate movements are based on in-house forecasts for the Albanian economy.

Within the framework of these metrics, the economic impact is quantified in terms of three separate effects: direct, indirect and induced. More detail on each is provided below, while Figure 2.1 illustrates the interaction between the different effects:

- **Direct:** refers to the economic activity undertaken by TAP AG itself and by Albanian firms to which TAP AG directly outsource contracts.
- **Indirect:** consists of activity that is supported as a result of purchases of raw materials and services by TAP AG and its first-tier supply chain from Albanian businesses, purchases by those companies in turn and so on.
- **Induced:** involves activity that is supported by the spending of those employed directly and indirectly by TAP AG.
- **Catalytic:** consists of other "spillover" benefits to the Albanian economy which are typically harder to quantify. This report analyses a variety of effects, including the impact of local infrastructure investment and knowledge and technology transfer.

Figure 2.1: Channels of impact



The remainder of this report is structured as follows:

- Chapter 3 provides an overview of the methodology
- Chapter 4 quantifies the economic impact
- Chapter 5 concludes
- Chapter 6 contains an appendix, with additional more technical information on the methodology

3 Methodology

- The starting point for the analysis was to develop estimates of the direct impact based on expenditure and employment projections supplied by TAP AG. As the profits from the project will be repatriated abroad, they were not included in our estimate of direct GDP. Monetary figures supplied by TAP AG were in 2011 prices. Therefore, as impacts were reported in constant 2012 prices, these figures were inflated using forecasts for Albania from the Oxford Economics Global Macroeconomic Model.
- In order to estimate the multiplier impacts (indirect and induced effects) an Albanian input-output table was manipulated, based on data supplied by the Global Trade Analysis Project (GTAP). Adjustments were made to account for "leakage" i.e. the fact that TAP is planning to procure some goods and services from foreign companies, activity which will not contribute to Albanian GDP.
- When estimating the number of jobs (part-time and full-time) generated by indirect and induced activity, adjustments were made to account for productivity growth. This was based on economy-wide productivity growth forecasts compiled by Oxford Economics.
- Other than direct payments to the government by TAP AG (which were based on internal projections) all other tax modeling was based on ratios of tax incidence and estimates of gross wages and profits derived as part of the main analysis.

This chapter provides a methodological overview with detail provided on data sources, assumptions used, modelling techniques etc. Further detail on selected issues can be found in the Appendix.

3.1 Internal projections

The starting point for the analysis was to develop estimates of the direct impact based on expenditure and employment forecasts supplied by TAP AG. For the construction phase of the project it is estimated that total expenditure will amount to around €1 billion, of which just under €400 million is expected to be spent on procuring locally-produced goods and services and employing locally-based workers. Construction is expected to occur over a four-year period (2015-18) with the split of expenditure by year as follows: 2015 (12.5%); 2016 (36%); 2017 (41%); 2018 (10.5%)[3]. For the operational phase of the project, we have

[3] The exceptions to this were for the €28 million of direct operational expenditure by TAP AG which was assumed to be split according to the following pattern over the 2015-18 period (15%, 30%, 30%, 25%) and the road infrastructure spending which was more front loaded (50%, 25%, 12.5%, 12.5%).

assumed that profits from the project are repatriated outside of Albania and hence the direct contribution to Albanian GDP amounted to the gross wages of employees.

3.2 Quantifying multiplier effects

An input output (IO) table for 2000, sourced from the GTAP[4], was used to quantify the multiplier impacts (indirect and induced effects). An IO table contains data on inter-sectoral purchases in an economy. In essence, it quantifies who buys what and from whom. By appropriately manipulating the IO table it is possible to estimate the extent to which a given purchase will generate demand for other sectors. As the IO table also incorporates the household sector, it is also possible to quantify the induced impact. When doing so, estimates were scaled down based on the fact that households do not spend 100% of their gross income on average (as is implicitly assumed by the IO table). Part of household income is taxed, thereby generating revenue for the Exchequer, and some of it is saved. Without this adjustment, the results presented in this report would overestimate the likely induced impact.

We "shocked"[5] the IO table using the level of locally outsourced expenditure (that part of outsourcing which generated business for Albanian firms). Expenditure was allocated to different sectors of the input output table according to the nature of the purchase e.g. spending on legal, accountancy and consulting services was allocated to the business services sector[6]. In doing so, we were able to quantify the total demand that would be created for the Albanian economy as a result of TAP AG's outsourcing. We then estimated the level of GVA that would be generated as a result, using sectoral ratios of GVA to gross output (sourced from the IO table).

Finally, the number of jobs (part-time and full-time), supported by this activity, was calculated by applying relevant estimates of sectoral labour productivity[7]. This process was repeated for each year[8]. Adjustment was made to account for productivity growth over time. Due to technological progress and capital investment a given level of GDP tends to support fewer jobs (part-time and full-

[4] The GTAP is a network of researchers and policy makers conducting quantitative analysis of international policy issues, coordinated in Purdue University's Department of Agricultural Economics. The IO table itself was developed by Mark Horridge, and we are grateful for his assistance in obtaining the data.

[5] "Shocking" the IO model simulates the effect of a given level of purchases in a specific sector on the wider economy. It is used to calculate the indirect and induced impacts.

[6] A full breakdown of the allocation of expenditure to different sectors is provided in Table 6.1.

[7] Sectoral productivity data were sourced from "Results on Structural Survey of Economic Enterprises", 2010, Albania Institute of Statistics

[8] In doing so we are implicitly assuming that the structure of the Albanian economy remains unchanged over the forecast horizon. Clearly, this will not hold in practice. However, it is very difficult to forecast such structural change with any degree of precision.

time) over time. Therefore, we grew forward current levels of labour productivity using own in-house forecast for the Albanian economy.

3.3 Modelling tax contributions

Such activity raises revenue for the government which is used to fund spending on public services, welfare and other functions. In this report, this effect was modelled in terms of four distinct channels: income tax raised on employee's earnings; corporation tax levied on companies' profits; social security contributions of both employers and employees; and VAT revenues raised as a result of the spending of employees.

Methodologically, estimates of revenue generated were quantified by applying economy-wide ratios of tax incidence to our estimates of gross profits and wages. The exception to this was for direct payments to the Albanian treasury by TAP AG, where we used internal projections. In all the remaining instances the former approach was used.

For income tax we assumed that 10% of employees' gross earnings would be collected by Exchequer[9]. We applied this rate to our estimates of gross earnings. The social insurance rate paid by employees is 11.2% (in addition to 21.7% by employers) on secured income between ALL[10] 18,295 and ALL 91,475. As the average wage was higher than ALL 94,475, we assumed that each employee would generate social security revenues of ALL 24,076. For corporation tax[11], we assumed that 10% of gross profits (outside of those generated directly by TAP AG) would be levied in corporation tax. Finally, it was assumed that VAT revenues generated were 10.1%[12] of GVA.

[9] Albania operates a flat rate of personal income tax of 10% for all those earning over ALL 30,000 (those on less than ALL 30,000, pay 10% on amounts over ALL 10,000). As the estimated average wage was above ALL 30,000, for simplicity, we assumed that no workers would qualify for the tax free personal allowance.

[10] ALL is the standard acronym used to reference the Albanian official currency, the Lek

[11] In Albanian law this is referred to as "profit tax".

[12] This was based on the ratio of VAT revenues to nominal GVA at the economy-wide level in 2011. Data on VAT receipts were sourced from the Albanian Ministry of Finance's Fiscal Bulletin, while data on nominal GVA was obtained from the Albanian Institute of Statistics.

4 Results

- The direct impact of the construction of the pipeline is expected to peak in 2017, making an estimated value-added contribution to GDP of €57 million and creating 4,200 jobs (part-time and full-time). In total, direct activities are forecast to contribute €157 million to Albanian GDP and support 2,900 jobs (part-time and full-time) per year on average. On average, the jobs will be relatively productive, with GDP per worker around 15% higher than the forecast economy-wide average.
- Due to TAP AG's commitment to outsource work to local suppliers where possible, the indirect impact is set to be considerable. Our modeling indicates that the indirect impact is likely to peak in 2017, with supply-chain purchases and associated spin-off work contributing an estimated €39 million to Albanian GDP and supporting 4,400 jobs (part-time and full-time). Over the whole construction phase, these figures rise to €110 million and 3,100 jobs (part-time and full-time) per year.
- Construction of the pipeline will create further benefits for the Albanian economy via the spending of employees (induced effect). Our modeling implies that this effect will create an estimated €106 million for Albanian GDP and help to support 3,900 jobs (part-time and full-time) per year between 2015-2018.
- Operational impacts are expected to commence in 2019 and last for 50 years. In total, inclusive of direct, indirect and induced effects, operational activity is expected to generate €780 million in GDP and support 460 jobs (part-time and full-time) per year.
- All this activity will generate revenue for the Albanian Exchequer. We estimate that the project will directly raise €40 million during the construction phase and €420 million during the 50 years of operation. Meanwhile, via indirect and induced channels, pipeline construction is expected to generate €47 million and a cumulative €53 million during operation.
- We also expect the project to create other "catalytic" benefits for the Albanian economy. We estimate that the gross discounted benefits of TAP AG's investment in roads to be worth between €237-€1,107 million over 20 years. Further benefits will also accrue through knowledge spillovers, CSR policies and the boost to energy supply.

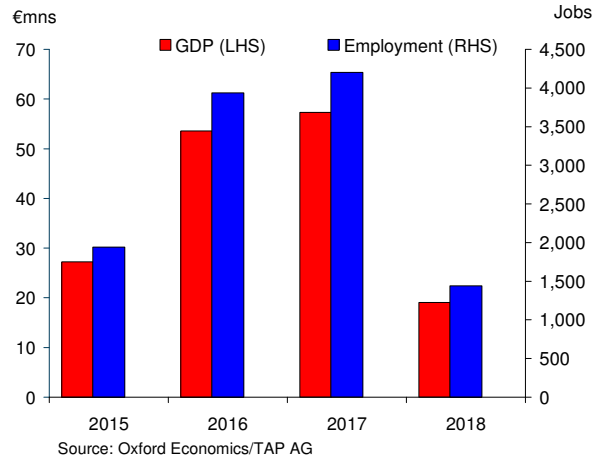
4.1 Construction

4.1.1 Direct impact

The direct impact of the construction of the pipeline is expected to be relatively even across the proposed project timeframe (2015-18). In total, direct activities will contribute an estimated €157 million to Albanian GDP and support 2,900

jobs (part-time and full-time) per year. On average, the jobs (part-time and full-time) will be relatively productive, with workers predicted to make a value-added contribution to GDP of €13,600 (at constant 2012 prices). Based on our forecasts for the Albanian economy, this will be around 15% higher than the economy-wide average during the period 2015-18[13]. Chart 4.1 illustrates the impact over time – the very tight correlation between the contributions to GDP and employment is a result of the fact that the project will not make any profits during this period. Therefore, GDP is equal to the gross compensation of employees, which is, of course, closely related to the level of employment.

Chart 4.1: Direct impact of pipeline construction



Source: Oxford Economics/TAP AG

4.1.2 Indirect and induced impacts

Construction of the pipeline will create further benefits for the Albanian economy through indirect and induced effects. Our modelling suggests that supply chain purchases will generate a total of €110 million for Albanian GDP between 2015-18, with the contribution expected to peak at €39 million in 2017. The employment impact follows a similar trajectory to GDP, peaking at an estimated 4,400 jobs (part-time and full-time) in 2017. Workers, on average, will generate €8,900 for the Albanian economy, lower than our forecast for economy-wide productivity during those years.

Meanwhile, the spending of direct and indirect employees (the induced effect) is expected to contribute a further €110 million to GDP during 2015-18, with the contribution again peaking in 2017, at an estimated €40 million. In total, the induced impact will support an estimated 3,900 jobs (part-time and full-time) per

[13] Based on our forecasts for nominal GDP, employment and the ALL/€ exchange rate we expect labour productivity (GDP per worker) in Albania to average €11,738 (at constant 2012 prices and exchange rates) during 2015-18.

year during 2015-18. Jobs (part-time and full-time) are relatively unproductive, reflecting the high share of employment in agriculture. Table 4.1 summarises the total economic impact of the construction phase of the project, breaking the benefits down by year and channel of effect across a variety of different metrics.

Table 4.1: Impact of pipeline construction (2015-18)

Economic impact of construction phase						
Impact	Metric	Unit	2015	2016	2017	2018
Direct	GDP	€mns	27	54	57	19
	Employment	Jobs	1,900	3,900	4,200	1,400
	Wages	€mns	13	23	25	8
	Productivity	€/worker	14,000	13,600	13,600	13,300
Indirect	GDP	€mns	21	37	39	13
	Employment	Jobs	2,300	4,200	4,400	1,500
	Wages	€mns	8	15	16	5
	Productivity	€/worker	8,900	8,900	9,000	8,900
Induced	GDP	€mns	18	37	40	12
	Employment	Jobs	2,600	5,400	5,800	1,800
	Wages	€mns	6	13	15	4
	Productivity	€/worker	6,700	6,800	6,800	6,900

Source: Oxford Economics, TAG AG, Institute of Statistics

4.2 Operation

4.2.1 Direct impact

Operational impacts are expected to commence in 2019 and last for 50 years. Rather than document the expected impact in each separate year, results in this section are presented for 2019 and grossed up over the total period. The operation of the pipeline is projected to directly generate €7.6 million for the Albanian economy in 2019, creating an estimated 190 full-time and part-time roles. In total, over 50 years, this translates to a cumulative increase in GDP of €500 million in GDP measured at constant 2012 prices.

4.2.2 Indirect and induced impacts

Relative to the construction phase, the indirect impacts of operation are small, reflecting less supply-chain activity. We estimate that operational activity will generate €1.5 million for Albanian GDP in 2019, helping to support 180 jobs (part-time and full-time). This translates into a total 50-year impact of €175 million. Meanwhile, the spending of direct and indirect employees is expected to contribute €0.6 million and support 80 jobs (part-time and full-time) in 2019. In total, the induced operational impact is forecast to generate €68 million in GDP. Table 4.2 summarises the operational economic impact including direct, indirect and induced effects.

Table 4.2: Impact of pipeline operation (2019-68)

Economic impact of operational phase				
Impact	Metric	Unit	Average annual impact	Total 50-year impact
Direct	GDP	€mns	7.6	500
	Employment	Jobs per year	190	190
	Wages	€mns	1.5	114.4
Indirect	GDP	€mns	1.5	174.6
	Employment	Jobs per year	180	180
	Wages	€mns	0.4	51.4
Induced	GDP	€mns	0.6	68.4
	Employment	Jobs per year	80	80
	Wages	€mns	0.2	25.2

Source: Oxford Economics, TAG AG, Institute of Statistics

4.3 Contribution to the treasury

Reflecting the relative incidence of activity, the project's contribution to the Albanian Treasury, during construction, is set to peak in 2017 at an estimated €32 million. Meanwhile, the breakdown of tax revenues, generated on production, between direct, indirect and induced channels changes significantly between the construction and operational phases of the project (Table 4.3). During the construction years, tax revenue raised is split fairly evenly between the three channels of impact with around 45% generated directly and the remaining 55% split evenly between the indirect and induced effects. In contrast, the vast majority of operational revenues are raised directly, reflecting payments by TAP AG to the Albanian government which are projected to amount to some €5.2 million per year.

Table 4.3: Tax revenue raised by channel of impact

Tax revenue contribution					
Impact	2015	2016	2017	2018	2019
Direct	6.7	13.8	14.9	4.7	6.0
Indirect	4.5	8.1	8.5	2.8	0.3
Induced	3.9	8.1	8.8	2.6	0.1
Total	15.1	30.1	32.1	10.2	6.4

Source: Oxford Economics, TAG AG, Institute of Statistics

4.4 Catalytic impacts

4.4.1 Road infrastructure

As part of the project TAP AG intends to invest €60 million in Albania's road infrastructure. Specifically, the investment will construct 29 km of new roads,

improve 79 km of current simple earth tracks to roads, rehabilitate 59 km of existing roads and establish 6-10 work camps with associated infrastructure.

Investment in road infrastructure generates economic benefits through a number of channels: a reduction in time travel for road-users as average speeds increase; an associated reduction in vehicle operating costs; and a reduction in accidents due to the improvement in the quality of the roads. Here, we produce a range of estimates of the value of these benefits using alternative rates of return from Albanian road infrastructure investments in the literature. However, it is important to note that these monetary values are not equivalent to GDP figures referenced earlier in this chapter.

A 2003 European Commission report[14] estimated internal rates of return for a series of road infrastructure projects in Albania. An internal rate of return (IRR) is defined as the discount rate at which the costs and benefits of the project are equal. Based on consultation with TAP AG, we assumed that €60 million invested in road infrastructure would be split in the following years: 50% (€30mn) in 2015; 25% (€15mn) in 2016 and 12.5% (€7.5mn) in both 2017 and 2018. We assumed that the benefits from the project would accrue over the following 20 years. Given this, we used the different IRR's to construct hypothetical streams of discounted benefits assuming that the discounted benefit was equal in each year of analysis. We then summed together the gross benefits[15] to generate an estimate of the total benefit to society (as the project is being fully funded by a foreign firm, we assumed that there would be no costs for the Albanian economy). The results are presented in Table 4.4.

Table 4.4: Benefits from road investment under different rates of return

Spillover Benefits from Road Investment	
Assumed IRR	**Gross Discounted Benefits (€mns)**
29.4%	1,107
23.2%	821
22.1%	777
9.5%	369
4.6%	237

Source: Oxford Economics, European Commission

As indicated gross discounted benefits over a 20-year period vary significantly between €237-1,107 million, reflecting the wide range of IRRs reported in the EC's study. However, it is worth noting that a study by the World Bank[16], which evaluated returns on the institution's investment projects, indicated that road infrastructure projects had, on average, the highest rate of return at 29%.

[14] European Commission, "Regional Balkans Infrastructure Study – Transport", July 2003

[15] Benefits were discounted at a rate of 7% per year.

[16] See http://www.iru.org/cms-filesystem-action?file=en_Resolutions_Mobility/00_infrastructure_e.pdf Annex 5 for more details. The report estimated rates of return on all sponsored highway projects between 1983-1992.

Therefore, in our view, it is likely that the value of benefits generated by the investment will be towards the top end of the range.

4.4.2 Knowledge transfers

In the economics literature, one of the key benefits often cited of foreign direct investment (FDI) is knowledge transfers imparted by more technologically advanced foreign firms[17]. The scope for these gains is typically greater in less developed countries such as Albania, with domestic firms, on average, less technologically advanced than in mature economies.

Although a formal quantitative estimate of the value of this effect is beyond the scope of this paper, analysis of the characteristics of the TAP AG investment is informative in identifying the likely channels of impact. As the project does not involve the take-over or investment in a domestic firm, there will be no direct efficiency gains via technology/knowledge transfers. However, as emphasised by Djurovic (2008)[18] these benefits can still occur indirectly via transfers to other local firms. Indeed, Gorodnichenko, Svejnar and Terrell's (2007)[19] analysis of emerging markets indicates that backward linkages (via the foreign firm's supply chain) generate the largest spillover benefits. Clearly, backward linkages in this project are significant in the construction phase (given the scale of direct outsourcing and the size of the indirect impact) suggesting that gains may be material.

Moreover, as TAP would represent the largest foreign investment (in value terms) in Albania's history, it has the potential to attract further major investments by foreign multinationals. For example, the experience the government will gain in handling a contract of this scale should enhance the credibility of Albania as a host country for FDI.

4.4.3 Corporate social responsibility

As part of its activities in Albania, TAP AG is planning to invest €4 million in a capability enhancement fund. Together with other regional donors, the aim is to generate a total resource pool of around €10 million. The scheme will be targeted at domestic enterprises, with participants gaining additional qualifications, expertise and experience, which should facilitate the expansion of local businesses in international markets.

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[17] The literature on the impact of FDI on host economies is vast and although empirical evidence is mixed, our survey suggested that the consensus is that inward FDI does generally generate economic benefits for the host economy via knowledge and technology transfers.

[18] Djurovic (2008), "FDI and Human Capital Formation in South-Eastern Europe Focusing on Republic of Macedonia", *Economic Journal of the Institute of Economics in Republic of Macedonia*, June 2008

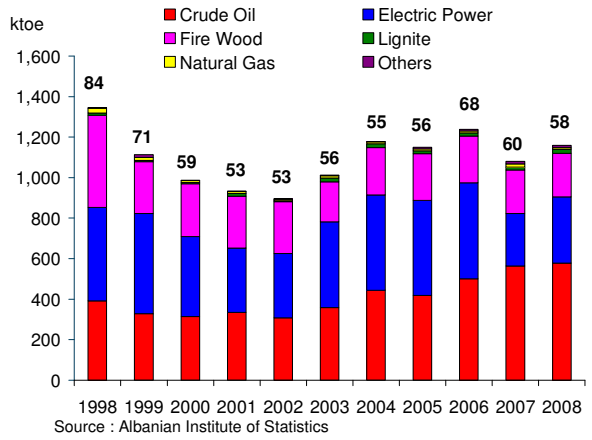
[19] Gorodnichenko, Svejnar and Terrell (2007), "When Does FDI Have Positive Spillovers? Evidence from 17 Emerging Market Economies", *Ross School of Business Working Paper Series No.1101*, October 2007

In addition, TAP AG has committed to "enhancing through social and environmental investments living conditions in neighbouring communities and biodiversity and forest cover in and around critical habitats". Around €15 million has been earmarked for these activities, with the focus on developing and sustaining good relations with local communities. Although details on the breakdown of spending are not yet available some of the likely investments include: providing support to schools and other training and education services; rehabilitating communal buildings; funding environmental projects; and supporting the enhancement of local income opportunities and value chains.

4.4.4 Enhanced availability of gas

A final potential "spillover" benefit from the project is the enhanced availability of natural gas to the local economy. Albania currently suffers from a lack of domestic energy resources, implying that it is highly dependent on imports to satisfy demand. According to the Institute of Statistics, imports of electric power in 2012H1 accounted for 44.9% of total derived energy up from 36.7% a year earlier. Chart 4.4 illustrates the changing distribution of Albanian energy production. The figures above the stacked bars show economy "energy independence" measured as the percentage of final consumption of primary products that is accounted for by domestic production. It is clear that Albania's reliance on imports increased sharply at the turn of the last century, with the economy's primary production sufficient to meet only around 55-60% of total energy demand between 2000-2008[20].

Chart 4.2: Primary production and energy independence in Albania



Source : Albanian Institute of Statistics

The economy is currently largely dependent on hydro for electricity generation. This dependence makes the power system vulnerable to variations in rainfall,

[20] Unfortunately, data was only available through to 2008 on the national statistics website.

with periodic electricity crises occurring during 2000-2010. Given the current deficiencies and the expected increase in energy demand the Ministry of Energy and Industry has devised a National Energy Strategy (NES) 2006-20. Among the key objectives of the strategy are boosting supply security by increasing the diversification of energy sources and the construction of new generation plants and inter-connection lines. To this end, the report projects an increase in demand for natural gas of up to 1.8 billion cubic meters (bcm) by 2020.

According to a recent report by the Oxford Institute for Energy Studies[21], such a target is ambitious. It depends on the timely gasification of the country through international pipeline projects, the relatively rapid expansion of the Albanian gas-fired power generation sector and the upgrading of the country's pipeline infrastructure. In this light, the successful completion of TAP can be seen as absolutely fundamental to meeting this objective. Indeed, indications from TAP AG suggest that the project may make between 1-2 bcm of gas available at commercial rates from 2018 onwards, which would provide a considerable boost in reaching the economy's strategic targets.

Moreover, an alternative of importing Liquefied Natural Gas (LNG) by constructing terminals on the Adriatic coast is beset by difficulties, as described by the Oxford Institute for Energy Studies report. Not only is there fierce regional competition for such projects, but the low-price environment in Albania risks undermining profitability.

There is also the possibility that, given its strategically advantageous position, TAP could enable Albania to connect gas to other neighbouring countries, by interconnecting with the Ionian Adriatic Pipeline (IAP). Doing so would enable regional economies access to the abundant energy resources in the Caspian basin. Other benefits may derive from the fact that enhanced availability of gas could increase the supply of energy resources e.g. it has the potential to improve oil recovery rates from existing fields. Meanwhile, both cement production and steel production may become more efficient, which in turn would generate benefits for sectors reliant on these raw materials.

Finally, the increased availability of gas may provide the opportunity to enhance oil and gas exploration and production from incumbent energy resources. For example, gas can be used to improve oil recovery rates from existing fields. Other possible applications include the more efficient production of both steel and cement. This in turn would generate external benefits for other Albanian industries that are reliant on these raw materials.

[21] "Natural Gas in Greece and Albania: Supply and Demand Prospects to 2015", Anastasios Giamouridis, December 2009

5 Conclusion

The objective of this report has been to provide a robust assessment of the economic impact of the planned development of the TAP on the Albanian economy, during both the construction and operational phases. Our results show that the direct impact of the construction phase of the project is likely to peak in 2017 when it will make an estimated value added contribution to GDP of €57 million and create 4,200 jobs (part-time and full-time). Further benefits will then accrue via domestic supply chain purchases of firms which have been outsourced work directly by TAP AG. We expect that the indirect impact will peak in 2017, generating an estimated €39 million in GDP, activity that will support 4,400 jobs (part-time and full-time). These figures rise to €110 million and 3,100 jobs (part-time and full-time) per year over the total construction horizon. In addition, the spending of direct and indirect employees will create economic benefits elsewhere. In total, we estimate that this channel will generate an estimated further €106 million in GDP and 3,900 jobs (part-time and full-time) per year between 2015-18.

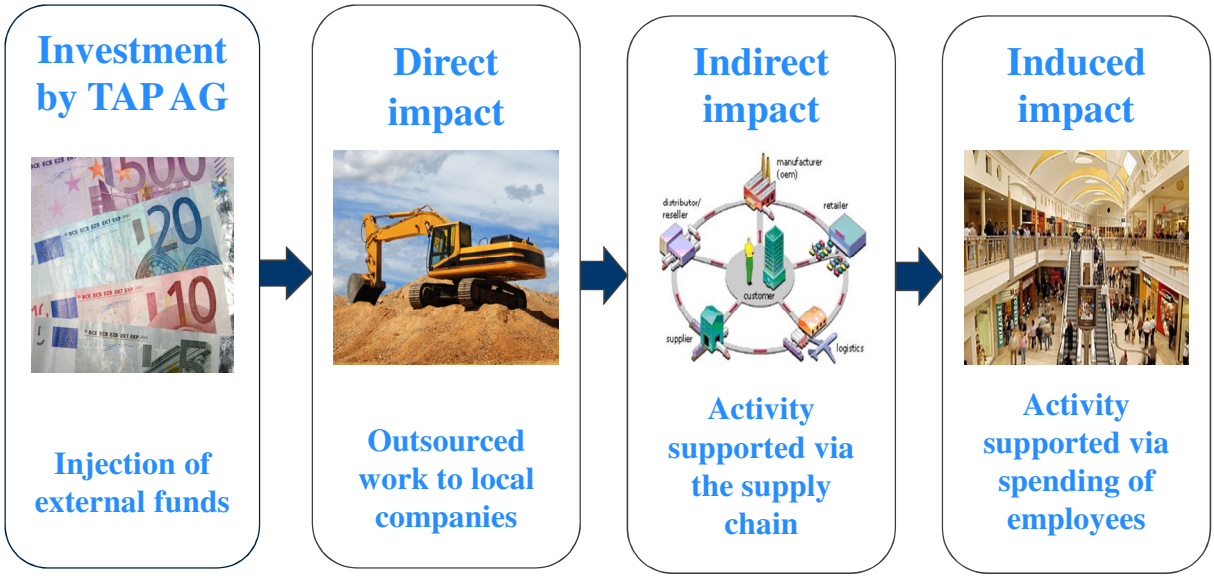
On top of this the project will generate persistent operational benefits. Over the 50-year operating horizon, we estimate that these will amount to a €740 million total contribution to GDP with this activity supporting 450 jobs (part-time and full-time) per year on average.

Therefore, in its own right, the project will generate significant benefits for the Albanian economy. However, this report has also drawn attention to a number of possible “spillover” effects which, although impossible to quantify with the same precision, are likely to be even more significant. These include the value of associated road infrastructure investment, knowledge and technology spillovers to local firms, CSR initiatives undertaken by TAP AG and increased availability of natural gas to help meet the expected future increase in energy demand.

6 Appendix

This appendix provides further methodological detail on the report. The approach to modelling the economic impact of the pipeline followed traditional methods well established within the economics literature. Input-output modelling is used to quantify how an injection of spending (in this case outsourced contract work by TAP AG) flows through an economy, as activity is further stimulated by the procurement of goods and services by directly affected firms and the spending of employees whose jobs (part-time and full-time) are supported by the increased activity. Figure 6.1 provides a visual illustration of this process.

Figure 6.1: Channels of economic impact



For additional clarity, it is useful to consider a specific example related to the project. For expositional ease, we assume a hypothetical total value investment of €100 million[22] in onshore pipeline although this figure should not be thought of as indicative of the project's economic impact. This example is referred to periodically throughout the appendix and serves as a reference point for the chapter. Table 6.1 provides an indication of how these funds would flow to different sectors of the economy and is based on information provided by TAP AG. Given the shares in the table, therefore, a €100 million investment would

[22] For the purposes of this exercise, it is assumed that the total value of investment is outsourced to Albanian companies. Of course, in practice this will not be the case and this "leakage" was fully accounted for in the actual modelling.

generate €71.4 million for firms in the construction sector, €0.7 million for firms in metal products manufacturing etc.

Table 6.1: Value of direct activity generated by TAP AG by economic sector during construction[23]

Direct Expenditure Allocation		
Item	**Expenditure (% share)**	**Sector Allocated**
Pipeline onshore		
Construction	71.4%	Construction
Fabricated metal products	0.7%	Metal products
Machinery and equipment	0.4%	Machinery & equipment nec
Administrative services	5.2%	Business services nec
Accommodation and food	7.1%	Trade
Legal, accounting consulting	1.3%	Business services nec
Land Transport	11.9%	Transport nec
Architectural and engineering	2.0%	Business services nec

Source: TAP AG

6.1 Estimating the direct impact

From here, we were able to assess the direct economic contribution of this activity in terms of its contribution to GDP and the number of jobs (part-time and full-time) it would create. The extent to which this activity contributes directly to GDP depends upon the scale of intermediate consumption of the local firm. The firm will use part of the value of the contract to purchase goods and services from other Albanian companies, part of it to purchase goods and services from abroad, part of it to pay its workers and keep the remainder as profits. The latter two items represent the direct contribution to GDP, with the first contributing towards the indirect impact and the second "leaking" out of the economy. Therefore, to estimate the direct impact on GDP we applied sectoral ratios of GVA to Gross Output (sourced from the IO table) to our expenditure estimates.

For the hypothetical onshore pipeline investment, such a process indicates that the initial injection of €100 million would directly generate €42.0 million of value-added for Albanian firms awarded the contracts. Of this €42.0 million, around €19.9 million would take the form of employee wages (thus contributing to the induced impact).

Subsequently, we estimated the associated number of jobs (part-time and full-time) that this activity would create using sectoral productivity levels. These were calculated using data for 2010 from the Albanian statistics authority and grown forward using in-house forecasts of economy-wide productivity growth.

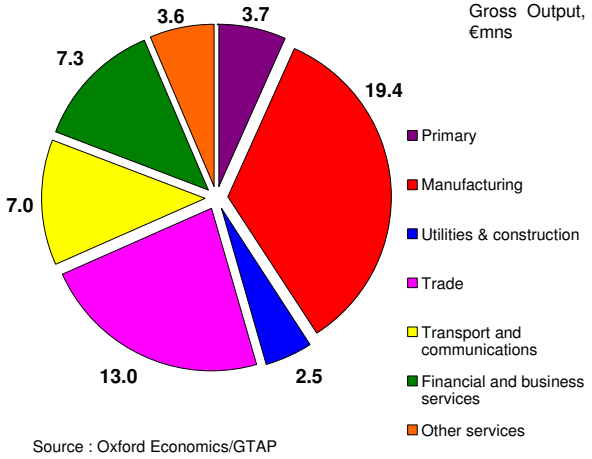
[23] Modelling excluded expenditure on the CSR programme as this is classified as a catalytic benefit. Compensation for land and easement refers to payments made directly to Albanian households. As such they do not generate an indirect impact but do contribute to the induced effect (by boosting purchasing power) and hence are allocated as a "missing induced" effect.

6.2 Input Output modelling to assess the indirect and induced impacts

The expenditure values provided by TAP AG also provided the basis for the input-output modelling used to calculate the indirect and induced impacts. A 57-sector IO model was sourced from GTAP. An IO table quantifies economic relationships between sectors i.e. the extent to which sectors buy and sell goods and services between each other. When manipulating the IO table, an adjustment was made to the compensation of employees coefficient to reflect the fact that part of the wage income earned by households will be taxed and therefore will not be spent. Not adjusting for this factor would otherwise lead to an overestimation of the induced effect.

Based on the €100 million onshore pipeline investment, our input-output model indicates that a further €56.5 million of revenue would be generated by Albanian firms awarded contracts purchasing goods and services from other firms based in Albania, and further supply chain iterations. This supply chain activity is distributed across the Albanian economy with the largest revenues generated for manufacturing (€19.4 million) and trade[24] (€13.0 million) (Chart 6.1).

Chart 6.1: Industry breakdown of hypothetical indirect impact



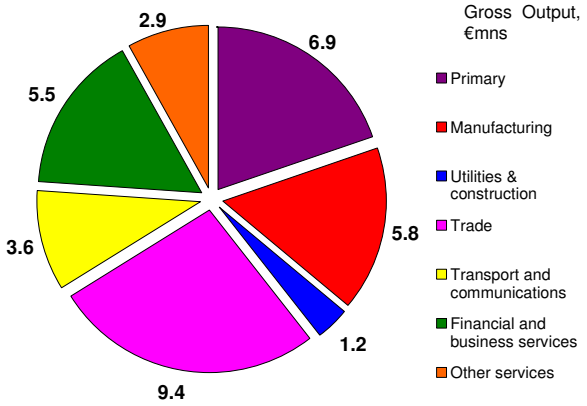
Source : Oxford Economics/GTAP

Of the €56.5 million around €29.6 million would be value added (of which €11.9 million would represent compensation of employees) implying that the initial investment of €100 million would contribute €71.6 million to Albanian GDP via direct and indirect effects. In addition to this, the economy would benefit from the spending of employees who have cumulatively earned €31.8 million as a result of the direct and indirect impacts of the investment in onshore pipeline.

[24] Here, trade refers to both wholesale and retail activity, together with accommodation and food services.

Moreover, such spending generates further induced effects (as households spend income generated by this first round of spending). Our modelling indicates that this spending would create a further €19.5 million of value added (so €91.1 million in total). Compared to the indirect impact the breakdown of spending is more focused on the service sector (as it reflects activity resulting from consumer spending). Hence, the largest sectoral revenue effect if for trade (€9.4 million), followed by the primary sector (€6.9 million) (Chart 6.2).

Chart 6.2: Industry breakdown of hypothetical induced impact



Source : Oxford Economics/GTAP

6.3 Measuring contribution to the treasury

From our estimates of the direct, indirect and induced impacts on GDP and employment, we were able to quantify the extent to which such activity would generate funds for the Albanian treasury. As part of this, we split our estimates of GDP into Gross Operating Surplus (GOS) and Compensation of Employees (CoE) using ratios obtained from the IO table. Four alternative forms of tax were included in the modelling: income tax; social security contributions; corporation tax; and VAT.

In Albania, employees currently pay personal tax on their income at a rate of 10% of income if it exceeds ALL 30,000. We applied this to our estimates of average earnings to calculate average income tax generated per employee and then scaled up this figure using our estimate of total employment. Social security tax rates are 11.2% (employee) and 21.7% (employer) on compensation between ALL 18,295-91,475. Therefore, for someone earning more than ALL 91,475 social security payments would amount to ALL 24,076. As the average wage for all groups of employees (direct, indirect, induced during construction and operation) was higher than ALL 91,475 we calculated total social security receipts by multiplying ALL 24,076 by employment. A flat tax of 10% is charged on corporate profits. Therefore, we quantified corporate tax receipts by multiplying our estimate of GOS by 10%. Meanwhile, the headline rate of VAT is

20% but as this is not applicable to all goods and services, and firms are only liable to pay VAT on value-added and can reclaim payments made on intermediate consumption. Therefore, we calculated the economy-wide ratio of VAT revenue[25] to GDP (10.07%) and applied this to our estimates of GDP.

[25] This figure, for 2011, was sourced from the Albanian Ministry of Finance's Fiscal Bulletin.

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