**MEMORANDUM**

Date : 29-11-1420 (06-03-2000) cc : M. Dobaib (Summary)

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Ref : Appl.#3106 - National Industrialisation Co. (NIC) Polypropylene Project, Jubail

**Sub** : **MARKET REPORT**

**Summary, conclusions and assesment of success factors**

The National Industrialisation Co. (NIC) Polypropylene Project, Jubail, is a limited liability company, under formation, owned 50% by the National Industrialisation Co.(NIC), 25% by Targor, Germany; and 25% by Saudi joint stock companies. NIC are well known to SIDF through their numerous industrial projects in the KSA. Targor are a merger of the polyolefins businesses of BASF and Hoechst. In 1999, BASF and Montell, a subsidiary of the Royal Dutch Shell group of companies, have announced a merger of their polyolefins interests. Targor will provide technical licensing and marketing offtake for the project.

The M.O.I.E. licence #880 dated 13-10-1415H, permits NIC to produce 450,000 Tpa polypropylene (PP) at Jubail. It needs amendment to reflect the proposed shareholding.

The NIC Polypropylene project's application is for an SIDF loan of SR400 MM, which is 38.4% of their estimated project cost of SR1,041 MM. NIC Polypropylene project's equity capital will be SR260 MM and SR381 MM will be raised through commercial bank loans.

NIC propose to build a 450,000 Tpa PP plant, due to start in 2003. It will use Targor's process, which accounts for more than 25% of the world PP capacity, including licensees such as BASF, Hoechst, and . NIC Polypropylene project will make PP homopolymers, random and heterophasic copolymers. PP serves diverse end uses such as fibres for carpets and non-wovens; raffia for woven sacks/carpet backing; BOPP/cast film; moulded houseware/crates/auto-parts/containers; and extruded sheets/pipes/cables.

The key raw material, polymer grade propylene, will be supplied by NIC's Propylene project (Appl.#3105), Jubail, at $370/Ton.

The global market study prepared by Targor is based on data provided by SRI, USA, and Chem Systems, UK. The worldwide PP capacity is estimated to increase from 21.92 MM Tpa in 1995 to 35.6 MM Tpa in 2001, and to 45.86 MM Tpa in 2005, as detailed in Appendix A. Of this additional capacity, a total of about 1 MM Tpa in Indonesia, Korea, Iraq, Iran and Turkey is likely to be delayed/cancelled as the financing is uncertain. The PP production capacity in the KSA is poised for a dramatic increase from 0.27 MM Tpa in 1995 to about 1.18 MM Tpa in 2005, shared by Ibn Zahr (0.64 MM Tpa), Yanpet (0.26 MM Tpa) and NIC Polypropylene project (0.28 MM Tpa).

The PP world demand is forecast to grow by about 17.4 MM Tons from 19.6 MM Tpa in 1995 to 37.0 MM Tpa in 2005. In 1998 the world PP consumption is estimated to be about 40% in Asia, 25% in W.Europe, 23% in N. America and 5% in the Middle East/Africa. The demand forecast in target markets is given below in thousand Tpa:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PP demand in target markets | 1995 | 1998 | 2001 | 2005 |
| Saudi Arabia | 57 | 101 | 124 | 165 |
| Other GCC | 15 | 29 | 50 | 74 |
| Other Middle East/N. Africa | 722 | 969 | 1,216 | 1,502 |
| West Europe | 5,041 | 6,250 | 7,150 | 9,085 |
| Asia Pacific | 7,600 | 9,340 | 11,195 | 14,585 |
| Total demand in target markets | 13,435 | 16,689 | 19,735 | 25,411 |

Targor will market 85% of the project's production, other than NIC Polypropylene project's PP sales in the GCC countries, Yemen and Sudan. Targor's offtake agreement is vital for the viability of this project. The access to worldwide markets, an existing global sales organisation, and the risks in collecting payments from customers in remote countries, support the offtake agreement. Targor's marketing fee of 4% on the FOB Jubail price is reasonable compared to SABIC's fee of 5% from SADAF, Yanpet and Ibn Zahr.

The fundamental driver of project economics is the net margin between PP and polymer grade propylene and its price. Historically, the PP and propylene prices have not been independent of each other. At times of PP shortages, leading to high prices, propylene prices have also risen. Conversely, during periods of low propylene pricing, PP suppliers have been forced by their customers to reduce prices. SIDF concur with NIC Polypropylene project's basis of PP pricing but their base case assumes prices which are high to begin with. Our analysis, given in this report and Appendix B, is based on a gradual recovery of current prices and a cyclical downturn in 2005 as forecast by Targor. The sales forecast in thousand Tpa, FOB Jubail and netback prices are given below:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sales / Price | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| GCCsales'000Tpa | 42 | 44 | 49 | 52 | 58 | 62 | 67 | 72 | 78 |
| Exports '000 Tpa | 142 | 222 | 201 | 243 | 237 | 188 | 228 | 223 | 172 |
| Total '000 Tpa | 184 | 266 | 250 | 295 | 295 | 250 | 295 | 295 | 250 |
| Average FOB $/T | 686 | 707 | 784 | 821 | 757 | 667 | 591 | 599 | 639 |
| Netback $/Ton | 666 | 683 | 759 | 794 | 734 | 648 | 574 | 582 | 622 |

The conversion of propylene into 280,000 Tpa PP with an average netback of $678/Ton is expected to provide a margin of about US$316/Ton, based on a propy-lene price of $362/Ton, which would add value of about $88.48 MM/year in the KSA.

The NIC project's 280,000 Tpa PP capacity represents about 10% of Targor's global PP sales. By offering a combination of differentiated products, superior product quality, technical support and reliable logistics, NIC's PP project aims to become the preferred supplier for targeted key customers. NIC Polypropylene project would be able to compete and find an equilibrium in the regional markets with SABIC, PIC, Petkim and Oriental Petrochemicals. Competition in world markets being assured from the local suppliers, Targor will utilise their product differentiation, global marketing network and customer relationships to ensure that NIC PP project's production is sold out. Overall, the forecast worldwide demand for PP would be sufficient to accommodate the project's supply.

The NIC PP project's greatest asset will be Targor's technical, marketing, financial and business leadership. Targor rank second worldwide with 26 PP plants at 20 sites. Targor share of the PP market is about 11% globally and 22% in West Europe and USA. The 'Spheripol' technology, the propylene feedstock from NIC's integrated propylene project, the logistically suited location in the KSA and the low-cost financing would be NIC PP project's core competencies. An assessment of the key success factors of this project is summarised below:

**Strengths**

1. Assured propylene feedstock availability from SAMREF, Jubail, for 30 years plus

2. Targor's reputation in the world markets for consistent product innovation

3. The leading manufacturing technology, 'Spheripol', which includes 11 MM Tpa capacity with 75 plants in 29 countries capable of producing sophisticated PP

4. 50% equity participation by Targor, now acquired by the Royal Dutch Shell group

5. Growth in the PP world demand by 17.4 million Tons between 1995 and 2005

6. Logistical advantages of cost and time for regional customers

7. Targor's global marketing presence would provide the most rewarding netbacks

8. Strong market development and technical support provided by Targor

9. Al-Moajil, the largest PP woven sack producer in the KSA, is one of the partners

**Weaknesses**

1. The plant will start eight years after SABIC's PP supply from Ibn Zahr

2. The need to start-up a local marketing and sales organisation

3. The plant start-up is due when the Asian demand is expected to return to normalcy

4. The price cyclicality causes swings in the profitability of the PP business

**Recommendations**

Marketing Division support this project, subject to financial assessment based on our forecast sales and prices, and subject to the following conditions :

i) The marketing offtake agreement between the project and Targor, including the measures to assist and train the project's marketing personnel, is satisfactory to SIDF.

ii) The ethylene supply agreement between the project and SABIC is resolved.

Ramoo Hattiangdi

1. **PROJECT**

1.1. **Ownership**

The National Industrialisation Co. (NIC) Polypropylene Project, Jubail, is a limited liability company, under formation, owned 50% by the National Industrialisation Co.(NIC), 25% by Targor, Germany; and 25% by Saudi joint stock companies. NIC are well known to SIDF through their numerous industrial projects in the KSA. Targor are a merger of the polyolefins businesses of BASF and Hoechst. In 1999, BASF and Targor, a subsidiary of the Royal Dutch Shell group of companies, have announced a merger of their polyolefins interests. Targor will provide technical licensing and marketing offtake for the project.

1.2 **Industrial licence**

The Ministry of Industry and Electricity, KSA, industrial licence #880/S dated 13-10-1415H, permits NATPET to produce 23,600 Tons per annum (Tpa) of propylene and 180,000 Tpa polypropylene (PP), at the Jubail industrial area. The licence would need amendment to reflect the project's proposed production capacity of 295,000 Tpa polypropylene and the revised shareholding.

1.3 **Project description**

NIC Polypropylene project's application is for an SIDF loan of SR400 MM, which is 38.4% of the sponsor's estimated project cost of SR1,041 MM. NIC Polypropylene project's equity capital will be SR260 MM, while SR381 MM will be raised through commercial bank loans.

NIC Polypropylene project propose to build a PP plant at Jubail with a name plate capacity of 280,000 Tpa and an effective capacity of 295,000 Tpa. It is expected to start production in March 2001. The project will utilise the state-of-the-art, environ-mental-friendly 'Spheripol' process developed by Targor. The 'Spheripol' process accounts for more than 25% of the world's PP capacity. The licensees include Targor, Exxon, Hoechst, Dow, Borealis, Japan Polyolefins and Hyundai.

The key raw material, polymer grade propylene, will be supplied by the Saudi Aramco-Mobil Refinery (SAMREF) at Jubail. Consequently, the sponsor's project to produce propylene, Al-Fasel (P.S.#912), is now cancelled. SAMREF's price of propylene will be the average of the North West European contract price and the United States Gulf Coast contract price, less US$13.25 per Ton. NIC Polypropylene project are negotiating an agreement with SABIC/Yanpet to supply the lesser quantity of ethylene, which is required to produce polypropylene copolymers.

2. **PRODUCT AND APPLICATIONS**

2.1. **Product description**

Polypropylene (PP) is a translucent, odourless thermoplastic polymer. It has a specific gravity of about 0.9. It is light, hard, tough, resistant to moisture, oil, chemicals and withstands temperatures up to 1500 C. The project proposes to make PP homopolymers, PP random copolymers and PP heterophasic copoly-mers. The physical properties are determined during the polymerisation. The principal parameters which can be varied are molecular weight, molecular weight distribution, atactic/isotactic content and copolymersiation.

2.1.1 Homopolymers are produced from propylene in a single reactor. Homopolymers account for about 75% of all PP consumption. They are more rigid and have better resistance to temperatures but their impact strength is inferior in comparison with copolymers. As homopolymers are stiffer than copolymers, they can be used in thinner sections and they exhibit better creep resistance. Targor's PP homopolymers are branded 'Moplen' and the numerous grades have melt a flow index (MFI) ranging between 0.3 dg/min and 55 dg/min.

2.1.2 Random copolymers are produced from propylene and a limited amount of ethylene in a homopolymer reactor. The term random refers to the random incorporation of ethylene in the main PP chain. Random copolymers account for about 5% of all PP used. They are transparent, very tough at ambient temper-atures and possess excellent sealing properties. They exhibit good resistance to heat distortion and are easier to process than PP homopolymers and hetero-phasic copolymers. Targor's PP random copolymers are branded 'Moplen EP1' and 'Moplen EP2' and have an MFI ranging between 1.8 dg/min and 9 dg/min.

2.1.3 Heterophasic copolymers, also known as block or impact copolymers, comprise homopolymer produced from propylene in a single reactor to which are added blocks of ethylene and propylene copolymer in a second reactor. Heterophasic copolymers account for about 20% of all PP consumption. They exhibit superior impact properties, especially at low temperatures. Targor's PP heterophasic copolymers are branded 'Moplen EP' and the different grades have an MFI ranging between 0.35 dg/min and 40 dg/min.

2.2. **Applications**

The wide range of grades (45 grades of PP homopolymers, 10 grades of PP random copolymers and 21 grades of PP heterophasic copolymers are listed in the Moplen data brochure) and their varied characteristics would allow NIC Polypropylene project's polypropylene to be used in diverse fields of application. NIC Polypropylene project would obviously have to rationalise the optimum number of grades, based on the market demand, to optimise reactor transitions and inventory management. Fibre and film are the two largest segments, followed by injection moulding, blow moulding and extrusion. Typical fabrication processes of PP and the end-uses are appended below :

|  |  |  |
| --- | --- | --- |
| Fabrication process | MFI | Key industrial segments served by polypropylene |
| Fibre | 11 - 35 | Carpets, non-wovens for hygienic products/felts/geotextiles |
| Film yarn/Raffia | 1.8 - 6 | Woven sacks, ropes, twine, carpet backing, nets,textile film yarn |
| Film | 1.8 - 9 | BOPP and cast film, packaging snack foods,bakery,confectionery, adhesive tapes, metallised film, labels,packaging, currency notes |
| Injection moulding | 1.5 - 40 | Automotive parts, batteries, crates, pails, closures, houseware, furniture, appliance parts, toys |
| Blow moulding | 0.35 - 2 | Luggage, bottles, medical articles |
| Extrusion | 0.3 - 3.5 | Sheets, pipes, strapping, laminates, wires and cables |

2.3. **Packaging**

The PP will be predominantly packed in 25 kg net PP woven sacks and shipped on shrink-wrapped pallets, or stuffed loose in 20 ft and 40 ft containers. Depending on the customers' needs, optional packaging would be provided in bulk trucks, 600 kg net jumbo bags and 1,000 kg net jumbo bags. The product would be co-branded in both NIC Polypropylene project and Targor trademarks.

2.4. **New product development**

Currently, PP is commercially produced with Ziegler-Natta catalyst systems. New metallocene catalysts are capable of producing PP with a very narrow molecular weight distribution, excellent elastomeric properties and good clarity. PP produced with metallocene catalysts is not yet commercially viable. NIC Polypropylene project will use Ziegler-Natta catalysts but the 'Spheripol' process is fully compatible with metallocene catalysts. As metallocene development continues, new catalysts will be evaluated for use in high-value market segments when it makes commercial and economic sense.

3. **SUPPLY**

NIC's feasibility study, dated February 1999, has been prepared by Chem Systems. The market study is also compiled by Chem Systems, UK, in 1999. We find that the supply, demand, pricing, target markets and competition of PP worldwide, have been well presented.

3.1. **Polypropylene supply in the KSA and Middle East countries**

The Saudi European Petrochemical Company (Ibn Zahr), Jubail, owned 70% by SABIC and 10% each by Neste, Finland; Ecofuel, Italy; and APICORP, KSA; started producing PP in 1993. Ibn Zahr have recently expanded their production capacity from 270,000 Tpa to 320,000 Tpa PP. Ibn Zahr's further expansion of the PP capacity from 320,000 Tpa to 640,000 Tpa PP, by the year 2000, has not been taken into account in Targor's market study.

The Saudi Jubail Petrochemical Company (Yanpet), Jubail, owned 50% each by SABIC and by Mobil, USA, produce ethylene, polyethylene (PE) and MEG. Yanpet are implementing a major expansion scheme to produce ethylene, PE, MEG and, for the first time, to manufacture 260,000 Tpa PP by the year 2000.

Ibn Zahr and Yanpet utilise the 'Unipol' gas-phase process to produce PP. This technology is known to have a limited product capability as it cannot produce more demanding products with very low or very high melt flow, which are used in added-value applications such as melt-blown fibres.

NIC Polypropylene project's nominal production capacity will be 280,000 Tpa PP. Targor's 'Spheripol' process will provide the technical advantage of being able to supply the full range and superior quality of PP homopolymers and copolymers.

Rassas, Riyadh (Inv.#1185), produce an insignificant quantity of approximately 2,000 Tpa post-consumer, re-cycled black coloured resin, which can be used only for injection moulded products which do not require food contact approval.

In 1998, the Petrochemical Industries Corporation (PIC), Kuwait, started producing PP by the 'Unipol' process, with a capacity of 100,000 Tpa.

Petkim, Turkey, have two small slurry plants, each with a production capacity of 40,000 Tpa PP. Petkim have planned a new 200,000 Tpa PP plant at Aliaga near Izmir but the financing and technology have not yet been identified.

The Arak Petrochemical Company, Iran, use Targor's 'Spheripol' to produce 50,000 Tpa PP, which is adequate to meet only the Iranian demand. The Bandar Imam Petrochemical project plans a production capacity of 100,000 Tpa PP by 2001, but its implementation is likely to be delayed.

The Techcorp project at Mussayed in Iraq proposes to utilise Targor's 'Spheripol' process to produce 100,000 Tpa PP.

The total production capacity of PP in the KSA and Middle East countries is poised for a significant increase from 520,000 Tpa in 1995 to about 1,780,000 Tpa in 2005, as appended below in Tpa, by producer, by country:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PP production capacity | 1995 | 1998 | 2000 | 2003 | 2005 |
| Ibn Zahr, Jubail, KSA | 270 | 320 | 640 |  | 640 |
| Yanpet-II, Jubail, KSA | 0 | 0 | 260 |  | 260 |
| NIC PP, Jubail, KSA | 0 | 0 | 0 |  | 450 |
| Teldene, Yanbu | 0 | 0 | 0 |  | 280 |
| PIC, Kuwait | 0 | 100 | 100 |  | 100 |
| Arak Petrochem, Iran | 50 | 50 | 50 |  | 50 |
| Bandar Imam Petchem, Iran | 0 | 0 | 0 |  | 100 |
| Petkim, Aliaga, Turkey | 80 | 80 | 80 |  | 80 |
| Techcorp, Iraq | 0 | 0 | 0 |  | 100 |
| Carmel, other M.East | 120 | 170 | 170 |  | 170 |
| Total Middle East | 520 | 720 | 1,580 |  | 1,780 |

Oriental Petrochemicals have announced their proposal to build a project with a production capacity of 120,000 Tpa PP at Alexandria, Egypt, in 2001. This plant's capacity has been accounted for in the African supply, which is given on the next page along with the supply in other major regions of the world.

3.2. **Imports in the KSA and Middle East countries**

The demand for PP grades not produced by SABIC in the KSA and the shortfall in domestic supply in other Middle East countries is met by imports from West Europe and USA. Imports are expected to cease and the exports would significantly increase after the proposed regional projects start production.

3.3. **Polypropylene supply worldwide**

About 21.9 million Tpa and 28.6 million Tpa PP capacity has been operational worldwide in 1995 and 1998, respectively. West Europe, USA, Japan and South Korea account for almost 70% of the global PP capacity. By 2001, NIC Polypropylene project's start-up year, the global PP production capacity is forecast to increase to about 35.6 million Tpa PP. The share of the four major producing regions will decrease, while the production capacity in the Middle East and Asia will increase. The future supply of PP will be linked to the availability and price of propylene. The PP production capacity by region is attached in Appendix A.

West Europe had been the largest PP producing region until 1995. The total production capacity is estimated to increase from about 6 million Tpa in 1995 to about 8.9 million Tpa in 2001, and to about 10.33 million Tpa in 2005.

North America had been the second largest PP producing region until 1995. The total production capacity of PP in the USA, Canada and Mexico is expected to increase from 5.44 million Tpa in 1995 to about 9 million Tpa in 2001, and to around 9.68 million Tpa in 2005.

Asia has now emerged as the largest PP producing region with capacity increasing from 7.8 million Tpa in 1995 to 18.9 million Tpa in 2005. Currently, S.E. Asia is facing financial turmoil. PP producers are saddled with a surplus capacity; obligations to export about 50% of their production; mounting external debt; the lack of cost advantage on feedstock and the lack of a strong marketing presence worldwide. Consequently, investment in new PP plants is likely to be on hold in South East Asia until the year 2000. China and India are implementing several PP projects to meet their respective domestic demand.

Japan has been one of the largest PP producing countries in the world. The Japanese production capacity is expected to increase from 2.6 million Tpa in 1995 to about 3.947 million Tpa in 2005. A previous report by Phillips Town-send, USA, sheds light on the rationalisation of the PP supply in Japan. Due to a situation of excess supply and irresponsible pricing by the Japanese producers in the 1980's, the Ministry of International Trade and Industry (MITI) instituted a program under the law for structural adjustment of specific industries. MITI rationalised PP capacity, limited expansions and permitted the formation of cartels. As a result, four manufacturing groups were formed : Union Polymers (Sumitomo, Ube, Tosoh, Chisso, Nissan-Maruzen ); Mitsui Polymers (Mitsui Petrochemicals, Mitsui Toatsu, Nippon Petrochemicals); Dia Polymers (Mitsubishi Kasei, Mitsubishi Petrochemicals) and Ace Polymers (Asahi Chemicals, Idemitsu Petrochem, Nippon Unicar, Showa Denko, Tonen Petrochem). With the dominance of these four groups, the supply and market stabilised, and imports of PP into Japan have become virtually impossible.

The past few years have witnessed several mergers between PP producers worldwide. To succeed in the future, producers of PP realise that they need to be integrated, have access to the latest technology, have a wide range of PP grades and be located in the major world markets.

Targor was formed by the merger of the polyolefins interests of BASF and Hoechst. While Montell was formed by the merger of Shell and Montedison. Targor have emerged as the single largest polypropylene producer and licensor of PP worldwide. Targor have twenty-six polypropylene plants located at twenty sites worldwide with a total production capacity of about 3.2 million Tpa.

In comparison, the next largest producers of PP and their global capacity are: Amoco (1.6 MM Tpa), Targor (BASF/Hoechst j.v., 1.3 MM Tpa), Fina (1.1 MM Tpa), Exxon (0.87 MM Tpa), Borealis (Neste/Statoil j.v., 0.84 MM Tpa) and Huntsman (0.75 MM Tpa).

Supply is expected to be reasonably well balanced by demand between 1995 and 2000. While there are several polypropylene projects planned in Asia and Middle East, a total of about 1 MM Tpa in Indonesia, Korea, Iraq, Iran and Turkey is likely to be delayed/cancelled as the financing is uncertain.

The worldwide PP capacity and estimated production, as per Targor's update of 20-05-1998, is appended below in thousand Tpa :

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PP supply | 1995 |  | | 1998 |  | | 2001 |  | | 2005 |  | |
|  | Capcity | | Producn | Capcity | | Producn | Capcity | | Producn | Capcity | | Producn |
| Midle East | 520 | | 433 | 720 | | 570 | 1,580 | | 943 | 1,780 | | 1,575 |
| Africa | 247 | | 170 | 462 | | 355 | 532 | | 427 | 942 | | 774 |
| Asia | 7,785 | | 7,009 | 10,662 | | 8,900 | 12,613 | | 10,905 | 18,878 | | 14,585 |
| W.Europe | 5,890 | | 5,464 | 7,390 | | 6,594 | 8,635 | | 7,296 | 10,325 | | 9,020 |
| E. Europe | 945 | | 545 | 1,105 | | 758 | 1,410 | | 985 | 1,630 | | 1,160 |
| N.America | 5,443 | | 5,148 | 7,018 | | 6,437 | 8,946 | | 7,694 | 9,681 | | 8,258 |
| S.America | 1,090 | | 851 | 1,200 | | 1,080 | 1,885 | | 1,630 | 2,620 | | 2,504 |
| World | 21,920 | | 19,620 | 28,557 | | 24,694 | 35,601 | | 29,880 | 45,856 | | 37,040 |

The global utilisation rate is estimated to decline from about 90% in 1995 to 86% in 1998, and from about 84% in 2001 to around 81% in 2005, due to the increase in PP production capacity worldwide.

4. **DEMAND**

4.1. **Polypropylene demand in the KSA and Middle East countries**

Experience in developing markets has shown that PP consumption increases at a rate much higher than the level of growth in the general economy. Ready availability of PP and technical support encourage local business to look for new investment opportunities. The GCC and Middle East countries will benefit from having additional PP capacity committed to meet their needs. The PP demand in the KSA will experience rapid growth over the next several years due to the supply from SABIC and increased development efforts by NIC Polypropylene project.

The current and forecast PP demand in the KSA, as per RESD's survey and as per SIDF's plastics industry study of November 1997, is lower than Targor's estimate. We have adjusted Targor's forecast of the PP demand in the KSA to be in line with our estimate, as appended below in thousand Tpa:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **KSA PP demand** | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| Saudi Carpet, Riyadh | 20.6 | 22.7 | 24.9 | 27.4 | 28.8 | 30.2 |
| Al-Soraya Carpet,Jeddah | 8.4 | 11.2 | 11.2 | 14.0 | 15.0 | 15.0 |
| Bahlas Carpet, Jeddah | 0 | 5.3 | 6.0 | 9.0 | 9.0 | 12.0 |
| **Sub-total carpet fibre** | 29.0 | 39.2 | 42.1 | 50.4 | 52.8 | 57.2 |
| Filling & Packaging,Riyadh | 10.8 | 12.5 | 12.5 | 13.2 | 13.5 | 14.0 |
| Al-Moajil Sack Fty.,Jubail | 7.5 | 8.8 | 9.0 | 9.6 | 9.7 | 9.9 |
| Saudi PP Sack Fty,Dammam | 4.5 | 5.2 | 5.5 | 5.8 | 5.8 | 6.0 |
| Al-Tawfiq,Jeddah/others strap | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| **Sub-total slit-tape/raffia** | 30.8 | 34.5 | 35.0 | 36.6 | 37.0 | 37.9 |
| Union Saudi Co., Jubail | 4.0 | 5.0 | 5.5 | 6.5 | 7.0 | 7.0 |
| Saudi German Co., Dammam | 0.7 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 |
| Alyaf Industrial Co | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| **Sub-total non-woven fibre** | 5.0 | 11.5 | 12.0 | 13.0 | 13.5 | 13.5 |
| **Sub-total BOPP/cast film** | 10.1 | 10.7 | 11.4 | 12.2 | 13.2 | 14.2 |
| **Sub-total injection moulding** | 5.0 | 5.4 | 5.8 | 6.3 | 6.8 | 7.3 |
| **Sub-total monofilament/rope** | 0.1 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 |
| **Total KSA demand per SIDF** | 80.0 | 101.0 | 106.6 | 118.8 | 123.6 | 130.4 |
| Total KSA demand per Targor | 97.0 | 110.0 | 124.0 | 140.0 | 162.0 | 178.0 |

The growth in PP demand is forecast to be fuelled by the increase in demand for fibre, film, raffia and injection moulding applications. In the case of the other Middle East countries, Targor's forecast demand of has been retained.

While the growth rates of PP demand vary for each country and are also expected to gradually decrease as the base demand in each market increases, the overall demand is estimated to grow at the rate of about 9% between 1996 and 2001, at about 6% between 2001 and 2006, and at around 5% between 2006 and 2010.

The demand forecast of PP in the Middle East and regional markets and Pakistan is appended below by country and by end use, in thousand Tpa :

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| PP demand by country | 1995 | 1996 | 1997 | 1998 | 2001 | 2005 | 2010 |
| Saudi Arabia | 57 | 76 | 80 | 101 | 124 | 165 | 242 |
| Other GCC | 15 | 20 | 24 | 29 | 50 | 74 | 106 |
| Jordan,Leb,Syria | 67 | 82 | 89 | 97 | 126 | 184 | 265 |
| Egypt | 159 | 198 | 220 | 244 | 334 | 422 | 519 |
| Turkey | 253 | 281 | 300 | 321 | 394 | 426 | 472 |
| Pakistan | 63 | 71 | 74 | 77 | 86 | 105 | 139 |
| North Africa | 55 | 60 | 65 | 70 | 89 | 120 | 170 |
| Iran | 34 | 37 | 40 | 43 | 54 | 74 | 97 |
| Iraq/other | 90 | 105 | 110 | 117 | 133 | 171 | 241 |
| Total region | 794 | 930 | 1,002 | 1,099 | 1,390 | 1,741 | 2,252 |
| PP demand by end use | 1995 | 1996 | 1997 | 1998 | 2001 | 2005 | 2010 |
| Raffia/slit tape | 315 | 340 | 355 | 376 | 430 | 543 | 710 |
| Fibre | 195 | 230 | 250 | 280 | 370 | 478 | 610 |
| Film | 105 | 130 | 148 | 170 | 248 | 298 | 360 |
| Injection moulding | 140 | 168 | 180 | 195 | 232 | 280 | 370 |
| Extrusion | 33 | 55 | 62 | 69 | 97 | 124 | 174 |
| Blow moulding | 6 | 7 | 7 | 9 | 13 | 18 | 28 |
| Total region | 794 | 930 | 1,002 | 1,099 | 1,390 | 1,741 | 2,252 |

4.2.  **Polypropylene demand worldwide**

Due to the advanced automobile and packaging industries, which use injection moulding and film grades of PP, respectively, the consumption pattern in West Europe and USA differs from that in the Middle East, as summarised below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PP end use | W.Europe | USA | Mid.East | Middle East/North Africa |  |  | | |
|  | 1995 | 1995 | 1995 | 1998 | | | 2001 | 2005 |
| Fibre/Raffia | 24% | 33% | 64% | 59% | | | 58% | 59% |
| Film | 20% | 11% | 13% | 16% | | | 18% | 17% |
| Injection moulding | 46% | 49% | 18% | 18% | | | 17% | 16% |
| Extrusion | 8% | 5% | 4% | 6% | | | 6% | 7% |
| Blow moulding | 2% | 2% | 1% | 1% | | | 1% | 1% |

The world PP demand is expected to grow at an average rate of 6.5% per year from 19.6 million Tpa in 1995 to 37.0 million Tpa in 2005, which would require about six plants of the size of NIC Polypropylene project's project every year.

The Asia-Pacific, West Europe and USA are the largest PP consuming regions. The PP demand in West Europe and USA reflects a strong growth rate of about 5% to 6% per year, indicating a robust industrial demand.

The predominant growth is in the Asian markets at about 7% per year and in the Middle East/Africa at about 7.5% per year. The Asia-Pacific region will continue to account for about 41% to 42% of the total world demand between 2001 and 2005. The global PP demand is appended below in thousand Tpa :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PP consumption | 1995 | 1998 | 2001 | 2005 |
| Middle East | 526 | 718 | 922 | 1,110 |
| Africa | 449 | 610 | 777 | 900 |
| Asia/Japan | 7,600 | 9,340 | 11,195 | 14,585 |
| West Europe | 5,041 | 6,250 | 7,150 | 9,085 |
| East Europe/ex USSR | 340 | 423 | 889 | 1,160 |
| North America/Mexico | 4,777 | 6,098 | 7,265 | 7,900 |
| South America | 887 | 1,255 | 1,682 | 2,300 |
| Total world | 19,620 | 24,694 | 29,880 | 37,040 |

4.3. **Polypropylene worldwide supply and demand balance**

Asia, excluding Japan, is and will continue to be the world's largest importer of polypropylene. The demand in Middle East and Africa would be supplied from the feedstock-rich countries in the region. The surplus polypropylene in North America will flow into Latin America until 2005, while the European surplus is expected to be supplied to East/North Africa and Asia. The estimated world supply and demand balance for PP is given below in thousand Tpa :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PP supply/demand balance | 1995 | 1998 | 2001 | 2005 |
| Middle East | (93) | (148) | 21 | 465 |
| Africa | (279) | (255) | (350) | (126) |
| Asia/Japan | (591) | (440) | (290) | (835) |
| West Europe | 423 | 344 | 146 | (65) |
| East Europe/ex USSR | 205 | 335 | 96 | 0 |
| North America/Mexico | 371 | 339 | 429 | 358 |
| South America | (36) | (175) | (52) | 203 |
| Total world | 0 | 0 | 0 | 0 |

5. **MARKETING STRATEGY AND OBJECTIVES**

NIC Polypropylene project will sell PP in the GCC countries, Yemen and Sudan through their own organisation. Targor will be obligated to export 85% of the project's production other than NIC Polypropylene project's sales, to world markets. The product would be co-branded in both NIC Polypropylene project and Targor trademarks. This will serve to reinforce the message that PP supplied from the NIC Polypropylene project project is of Targor quality.

The regional markets such as the GCC countries, Yemen, Jordan, Lebanon, Syria, Iran, Iraq, Turkey, Egypt, North Africa and Pakistan, will be the first focus of the sales strategy.

In Asia Pacific, Targor will preferentially target PP sales at net importing countries such as Australia, China, India, Korea and Taiwan. During periods of product shortage, due to the reduced availability of propylene from SAMREF every third year, volumes to Asia will be reduced.

Targor Europe is expected to be short in supply from 1998, which means that they will import PP to maintain market share. These volumes will most likely be specialised homopolymers and heterophasic copolymers. The country-wise sales will be driven by relative economics of supply out of the Targor's plants.

NIC Polypropylene project will capitalise on the technological advantage of the 'Spheripol' process to produce the full range of differentiated, performance products with a high quality and consistency. These products will provide customers in the large end uses such as the carpet industry and film, with processing advantages over competitors' products.

The NIC Polypropylene project project will capitalise on its excellent geographical position to provide the customer with a best-in-class delivery service, which would mean shorter lead time and improved reliability for customers.

NIC Polypropylene project will also capitalise on Targor's direct involvement in the fibre, film, compounds and alloy business segments.

6. **SALES TARGET AND MARKET SHARE**

6.1 **Targor's historical sales of polypropylene in the regional target markets**

Targor's PP sales in the GCC countries and regional markets, given below in thousand Tpa, have increased from 57,000 Tpa in 1990 to 89,000 Tpa in 1997, representing a market share between 10% and 15% :

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Targor PP sales | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| KSA | 3 | 10 | 19 | 12 | 6 | 1 | 3 | 4 |
| Other GCC | 1 | 0 | 2 | 2 | 5 | 5 | 6 | 6 |
| Jordan,Leb,Syria | 3 | 7 | 8 | 17 | 16 | 9 | 18 | 19 |
| Egypt | 26 | 25 | 28 | 25 | 26 | 22 | 17 | 18 |
| Turkey | 5 | 5 | 12 | 11 | 10 | 23 | 23 | 25 |
| Pakistan | 8 | 6 | 9 | 7 | 9 | 8 | 5 | 6 |
| North Africa | 7 | 6 | 6 | 5 | 11 | 9 | 9 | 11 |
| Iran | 4 | 3 | 1 | 3 | 2 | 2 | 1 | 0 |
| Total | 57 | 62 | 85 | 82 | 85 | 79 | 82 | 89 |

We have reduced NIC Polypropylene project's forecast market share in the GCC countries from 35% to 24%. This is based on the PP supply of 900,000 Tpa by SABIC, which would represent about 76% market share and around 24% for NIC Polypropylene project. In their letter of May 11, 1998, the sponsors have acknowledged that NIC Polypropylene project's sales in the GCC countries are likely to be about 24%. Consequently, Targor's exports are likely to be greater from this project. The implications are given in our memo dated 29-12-1418.

Other than reducing the sales target in the GCC countries and correspondingly increasing the sales in Asia and Europe, we find the volumes and the target markets to be logical and concur with the sponsor's sales forecast, appended below by year and by target market in thousand Tpa :

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sales | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| KSA | 30 | 31 | 34 | 36 | 40 | 43 | 46 | 50 | 54 | 58 |
| Other GCC | 12 | 13 | 14 | 16 | 18 | 19 | 21 | 22 | 24 | 25 |
| Jor,Leb,Syr | 20 | 27 | 33 | 35 | 39 | 42 | 49 | 49 | 49 | 49 |
| Egypt | 28 | 37 | 40 | 42 | 44 | 46 | 23 | 23 | 23 | 23 |
| Turkey | 11 | 12 | 13 | 14 | 14 | 15 | 18 | 18 | 18 | 18 |
| NorthAfrica | 8 | 9 | 11 | 11 | 12 | 11 | 10 | 10 | 10 | 10 |
| Pakistan | 7 | 11 | 12 | 13 | 11 | 10 | 5 | 5 | 5 | 5 |
| Asia Pacific | 55 | 100 | 60 | 80 | 80 | 50 | 80 | 80 | 50 | 60 |
| WestEurope | 10 | 23 | 30 | 45 | 34 | 11 | 40 | 35 | 14 | 44 |
| Total | 184 | 266 | 250 | 295 | 295 | 250 | 295 | 295 | 250 | 295 |

The swing in the annual sales volume between 250,000 Tpa and 295,000 Tpa, every third year, is on account of the reduced availability of propylene feedstock from SAMREF due to their maintenance shutdown.

6.2 **NIC Polypropylene project project's polypropylene market share**

The project's market share, shown below, seems reasonable and could be achieved, given the competitive advantages elaborated in the next section.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mkt share | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| GCC states | 24% | 24% | 24% | 24% | 24% | 24% | 24% | 24% | 24% | 24% |
| Jor,Leb,Syri | 16% | 20% | 22% | 21% | 21% | 21% | 23% | 21% | 20% | 18% |
| Egypt | 8% | 10% | 11% | 11% | 10% | 11% | 5% | 5% | 5% | 5% |
| Turkey | 3% | 3% | 3% | 3% | 3% | 3% | 4% | 4% | 4% | 4% |
| Pakistan | 8% | 12% | 13% | 13% | 10% | 9% | 4% | 4% | 4% | 4% |
| NorthAfrica | 9% | 9% | 11% | 10% | 10% | 8% | 7% | 7% | 6% | 6% |
| Asia | 0.5% | 0.8% | 0.5% | 0.6% | 0.6% | 0.3% | 0.5% | 0.5% | 0.3% | 0.3% |
| WestEurope | 0.1% | 0.3% | 0.4% | 0.5% | 0.4% | 0.1% | 0.4% | 0.3% | 0.1% | 0.4% |

7. **COMPETITION**

The competition for PP would be encountered at the regional level by NIC Polypropylene project and at the international level by Targor. In the GCC countries, the prime competitor will be SABIC. SABIC's long local presence, the doubling of Ibn Zahr's PP capacity and Yanpet's new PP plant will be the major challenge. On the other hand, the plants owned by SABIC and by PIC, Kuwait, are capable of producing a limited number of grades with broader particle size and broader molecular weight distribution. The limited technical ability and the limited market support provided by SABIC/PIC are perceived to be their weaknesses.

'Spheripol' PP grades enable BOPP film producers to run their lines at speeds higher than 350 metres/minute, much higher than with conventional grades. Targor's random copolymer BOPP grades show low seal initiation temperatures of 1150 C. 'Spheripol' Z21S grade for non-woven materials is the industry quality reference standard. 'Spheripol' grades CA012 and EPC57MA are unique grades used for caps and closures. Targor's latest heterophasic copolymers have improved production cycle time and product performance for the industry.

Arak Petrochemicals are geared to supply only the Iranian demand of PP. The lack of an overseas marketing organisation as well as their political situation make it difficult for them to compete in export markets.

Petkim, Turkey, have two old and obsolete slurry plants, which make limited grades. The higher costs, limited product range and the lack of a tie-up with an international organisation confine their competitive ability to their home market.

Oriental Petrochemicals, Egypt, are expected to depend on imported propylene, which would render the project uncompetitive in export markets. The Egyptian project will have the limitations of grades produced by the 'Unipol' process and the lack of a tie-up with an international marketing organisation. However, they would secure a dominant share in their home market.

The major producers, with their global PP capacity given in parenthesis, such as Amoco (1.6 MM Tpa), Targor ( 1.3 MM Tpa), Fina (1.1 MM Tpa), Exxon (0.87 MM Tpa), Borealis (0.84 MM Tpa) and Huntsman (0.75 MM Tpa), have a comparable product range and a duty advantage in W. Europe and USA. However, most of these competitors have an inferior local presence in export markets, a longer delivery time due to the lack of global production and a lack of focus on countries in the Middle East, Africa and Asia.

The 'Spheripol' technology, propylene feedstock from SAMREF, the logistical advantage of being situated in the KSA, and the low-cost financing support of SIDF would assist NIC's PP project to effectively compete in the target markets.

8. **PRICING**

8.1. **Polypropylene and propylene**

The fundamental driver of project economics is the net margin between polypropylene and polymer grade propylene and the price of the latter. Historically, the prices of polypropylene and propylene have not been independent, with each being influenced by the other. At times of polypropylene shortages, leading to very high prices, propylene prices have also risen. Conversely, during periods of low propylene pricing, suppliers have been forced by customers to reduce PP prices.

Due to this interdependency, it would be misleading to independently forecast prices of PP and propylene. Barring exceptional circumstances, the margin between PP and propylene is determined by the world PP supply and demand.

Targor have forecast the propylene price to be $380/Ton in W. Europe and $370/Ton in USA, assuming a crude oil price of $16/barrel, which corresponds to a price of $150/Ton naphtha, and based on 0.75 times the price of ethylene, which has been the historical average for the past decade. PP prices have been forecast by adding margin to the forecast propylene price.

NIC Polypropylene project had originally considered the West European price of propylene as the transfer price from the Al-Fasel project as Europe is the nearest source for a Saudi PP project in the absence of local feedstock. The ocean freight had neither been added nor deducted, so that the PP project would not be a disadvantage or advantage, respectively. SAMREF's pricing is based on the average contract prices in West Europe and USA of polymer grade propylene, less a discount of $13.25/Ton. NIC Polypropylene project will also receive a credit for return of the unutilised propylene/propane stream to SAMREF, while the latter will charge $15/Ton as service charges for the handling the return stream. NIC Polypropylene project have assumed a credit of $5.75/Ton for the return stream to SAMREF. Considering these factors, we find that the basis for the project's propylene cost price of $362/Ton to be reasonable from a marketing standpoint.

Adopting the above-mentioned method, PP prices have been forecast for West Europe and U.S.A. These form the basis for determining PP prices in the Middle East/Africa and in Asia, and for NIC Polypropylene project, as summarised below :

PP price in N.W.Europe and USA = Propylene price plus margin forecast

PP price in Middle East/Africa = Forecast PP price in West Europe

PP price in Asia = Average PP price in Europe and USA adjusted for volatility

NIC project PP price = Weighted average PP selling price less freight, less port handling charges, less import duties.

The historical contract prices of propylene and PP delivered to customer in West Europe and USA are given below in $/Ton, along with their average, the Asian prices and the volatility factor. Targor have then forecast prices for propylene and PP prices for the three major producing regions of the world.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| W.Europe price | 1990 | | 1991 | | 1992 | | 1993 | | 1994 | | 1995 | | 1996 | | 1997 | |
| Propylene | 526 | | 495 | | 404 | | 312 | | 335 | | 551 | | 375 | | 481 | |
| PP Base case | 1111 | | 912 | | 778 | | 643 | | 796 | | 1147 | | 848 | | 830 | |
| Margin | 585 | | 417 | | 374 | | 331 | | 461 | | 596 | | 473 | | 349 | |
| W.Europe | 1998 | 1999 | | 2000 | | 2001 | | 2002 | | 2003 | | 2004 | | 2005 | | 2006 |
| Propylene | 392 | 384 | | 410 | | 412 | | 405 | | 380 | | 380 | | 380 | | 380 |
| PP Base case | 804 | 792 | | 815 | | 818 | | 808 | | 779 | | 774 | | 770 | | 766 |
| Margin | 412 | 409 | | 405 | | 406 | | 403 | | 399 | | 394 | | 390 | | 386 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| USA price | 1990 | | 1991 | | 1992 | | 1993 | | 1994 | | 1995 | | 1996 | | 1997 | |
| Propylene | 477 | | 469 | | 372 | | 335 | | 382 | | 524 | | 419 | | 464 | |
| PP | 977 | | 892 | | 785 | | 673 | | 756 | | 1015 | | 940 | | 898 | |
| Margin | 500 | | 423 | | 413 | | 338 | | 374 | | 491 | | 521 | | 434 | |
| USA price | 1998 | 1999 | | 2000 | | 2001 | | 2002 | | 2003 | | 2004 | | 2005 | | 2006 |
| Propylene | 398 | 399 | | 389 | | 389 | | 380 | | 370 | | 370 | | 370 | | 370 |
| PP Base case | 807 | 801 | | 785 | | 779 | | 763 | | 747 | | 740 | | 734 | | 728 |
| Margin | 409 | 403 | | 396 | | 389 | | 383 | | 377 | | 370 | | 364 | | 358 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Asia price | 1990 | 1991 | | 1992 | | 1993 | | 1994 | | 1995 | | 1996 | | 1997 | |
| Avg. WE+USA | 1044 | 902 | | 781 | | 658 | | 776 | | 1081 | | 894 | | 864 | |
| Asia Pacific | 1026 | 892 | | 785 | | 673 | | 756 | | 1015 | | 940 | | 898 | |
| Cycle factor | 98% | 99% | | 100% | | 102% | | 97% | | 94% | | 105% | | 104% | |
| Asia price | 1998 | 1999 | 2000 | | 2001 | | 2002 | | 2003 | | 2004 | | 2005 | | 2006 |
| Avg. WE+USA | 755 | 750 | 731 | | 758 | | 777 | | 864 | | 865 | | 801 | | 735 |
| Asia Pacific | 707 | 690 | 678 | | 750 | | 780 | | 907 | | 994 | | 881 | | 735 |
| Cycle factor | 94% | 92% | 93% | | 99% | | 100% | | 105% | | 115% | | 110% | | 100% |

Specialty homoploymers and copolymers provide higher prices and netbacks. The premium over homopolymer grade is forecast to decrease as availability of these high performance grades increases. The premium over raffia grades is about $50/Ton for fibre, $70/Ton for BOPP film and $100/Ton for heterophasic and random copolymers. These premium are expected to decrease to $20/Ton, $25/Ton and $40/Ton, respectively, from 2001. Targor have assumed an average additional netback of $25/Ton for PP copolymers.

Targor have forecast the project's sales volume and revenues based on four scenarios, base case, upside case, downside case and cyclical case, which equate to the following netback ex-factory prices in $/Ton of PP. The sponsors have used the base case or trend line case to evaluate the project economics.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sales | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| Tpa'000 | 184 | 266 | 250 | 295 | 295 | 250 | 295 | 295 | 250 |
| Base case | 723 | 722 | 708 | 715 | 702 | 708 | 702 | 698 | 700 |
| Upside | 679 | 695 | 824 | 864 | 793 | 720 | 634 | 637 | 684 |
| Downside | 685 | 684 | 676 | 678 | 668 | 676 | 668 | 664 | 668 |
| Cyclical | 668 | 680 | 808 | 851 | 780 | 704 | 617 | 624 | 672 |

Targor's base case price does not take into consideration the current fall in the world prices of PP and propylene. In 1998, the contract prices have declined to very low levels of about $680/Ton PP and $340/Ton propylene in West Europe and around $640/Ton PP and $313/Ton propylene in USA. The Asian spot price of PP has fallen to a historical low of $520/Ton. These prices reflect the decline in the industrial demand in South East Asia arising from their financial turmoil, the resultant fall in demand and prices of crude oil, the decrease in the Asian prices of PP due to their lower cost in the local currencies, and the weakening of petrochemical feedstock prices.

We believe that the PP and propylene prices would continue to be depressed in 1998 and that they are likely to gradually recover in 1999 and 2000 to reach the level forecast in the cyclical case by Targor. We have, therefore, attempted to forecast prices between 1998 and 2000 by estimating an increase of 4% per year. From the year 2001 to 2010, we have assumed Targor's forecast cyclical prices which show an increase until 2005 and a decline until 2008, before making a recovery.

SIDF concur with NIC Polypropylene project's basis of PP pricing. However, our analysis, given in Appendix B, is based on a gradual recovery of current prices and a cyclical movement, as forecast on the next page in $/Ton.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| W.Europ | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
| Propylen | 340 | 360 | 390 | 412 | 405 | 380 | 380 | 380 | 380 | 380 |
| PP | 680 | 707 | 735 | 774 | 788 | 870 | 883 | 828 | 759 | 686 |
| Margin | 340 | 347 | 345 | 362 | 383 | 490 | 503 | 448 | 379 | 306 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| USA | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
| Propylen | 313 | 330 | 360 | 389 | 380 | 370 | 370 | 370 | 370 | 370 |
| PP | 640 | 690 | 720 | 742 | 766 | 858 | 846 | 774 | 710 | 676 |
| Margin | 327 | 360 | 360 | 353 | 386 | 488 | 476 | 404 | 340 | 306 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Asia | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
| Average WE+US | 660 | 699 | 728 | 758 | 777 | 864 | 865 | 801 | 735 | 681 |
| Asia | 607 | 643 | 677 | 750 | 780 | 907 | 994 | 881 | 735 | 599 |
| Factor | 92% | 92% | 93% | 99% | 100% | 105% | 115% | 110% | 100% | 88% |

We have assumed a premium of $25/Ton for sales of value-added PP grades in the export markets outside the GCC countries. The price in the GCC countries is estimated at the European level without the premium as NIC Polypropylene project will have to compete with SABIC's domestic price in the KSA. The project's netback price will be 4% less on the FOB Jubail price for sales through Targor. The forecast sales in thousand Tpa, the weighted average FOB Jubail and netback prices in $/Ton, are detailed in Appendix B and summarised below:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sales / Price | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| GCCsales'000Tpa | 42 | 44 | 49 | 52 | 58 | 62 | 67 | 72 | 78 |
| Exports '000 Tpa | 142 | 222 | 201 | 243 | 237 | 188 | 228 | 223 | 172 |
| Total '000 Tpa | 184 | 266 | 250 | 295 | 295 | 250 | 295 | 295 | 250 |
| Average FOB $/T | 686 | 707 | 784 | 821 | 757 | 667 | 591 | 599 | 639 |
| Netback $/Ton | 666 | 683 | 759 | 794 | 734 | 648 | 574 | 582 | 622 |

In addition, Targor will charge NIC Polypropylene project a royalty of 1.6% of net sales. This compares favourably with SABIC's R&D fee of 1.5% and 2% to SAFCO and Ibn Rushd, without being the technology licensor.

9. **DISTRIBUTION AND SALES ORGANISATION**

Distribution of polypropylene will be done in 25 kg net bags on shrink-wrapped pallets, or in 20 ft and 40 ft containers. The larger customers would receive their bulk supplies in 600 kg/1,000 kg net jumbo bags or by tanker trucks.

A Vice President Marketing, initially deputed from Targor, will handle the marketing and sales in the GCC countries, Yemen and Sudan, as well as the exports through Targor. The V.P. Marketing will report to NIC Polypropylene project's Executive V.P. NIC Polypropylene project propose to appoint experienced executives to handle sales in the home market, for market development and technical service to customers.

Targor will be obligated to export 85% of the project's production, other than the quantity sold by NIC Polypropylene project in their designated markets. It would be extremely difficult for NIC Polypropylene project to export 295,000 Tpa PP without access to a large number of customers worldwide. Targor manage a worldwide sales and distribution system through their regional offices in USA, Europe and Australia. The marketing fee of 4% of the FOB Jubail price would cover Targor's costs to manage the business including agents' commissions, supply management, customer service and technical support. It is reasonable for polymers.

Targor have a worldwide marketing and distribution network with on-going sales through the following network of agents in the target export markets :

|  |  |
| --- | --- |
| NIC Polypropylene project target market through Targor | Targor's sales agent |
| Jordan | Atlas establishment, Amman |
| Lebanon and Iraq | Flouty Trading, Beirut |
| Syria | Ghassan Foud Khabbaz, Damascus |
| Turkey | Targor International, Istanbul |
| Egypt | Montedison Egypt, Cairo |
| Tunisia | STOC Chimie, Tunis |
| Morocco | Afric Chimie, Casablanca |
| Malawi, Zambia, Zimbabwe | S.K. Petrotec, Harare |
| South Africa,Botswana,Lesotho,Mauritius,Mozambique | Bruneal Plastics, S. Africa |
| Burkino Faso,Burundi,Cameron,Congo,Ivory Coast,Mali,Zaire | Novakemi International, Belgium |
| Ghana, Gambai, Guinea, Liberia, Sierra Leone | Nestra Services, U.K. |
| Iran | Noorshell, Tehran |
| Pakistan | Polychem International, Karachi |

It is logical that NIC Polypropylene project do not duplicate the cost in establishing a sales organisation for PP in world markets where Targor have their sales offices.

The sales territory is essentially a partnership issue and should not jeopardise the project itself. The draft marketing offtake agreement between NIC Polypropylene project and Targor for PP is yet to be received. Overall, the sponsors need Targor's support in selecting, training and assisting the personnel for marketing, sales and distribution of PP and more importantly for providing the technology, financial investment and management for the NIC Polypropylene project project.

10. **ADVERTISING AND SALES PROMOTION**

Targor have maintained good contact with its loyal customer base who continue to express a preference to buy Targor PP. Targor also have strong foundations in the regional Middle East countries. Their on-going sales will be substituted by NIC's project's product, while additional sales would be generated by providing local supply, technical support and a wide range of superior quality polypropylene.

By offering a combination of differentiated products, superior product quality, technical support and reliable logistics, NIC Polypropylene project aims to become the preferred supplier for targeted key customers. The performance of NIC Polypropylene project operation will be bench-marked against other Targor operations to ensure world-class performance.

11. **CONCLUSION AND SUCCESS FACTORS**

12. **RECOMMENDATIONS**