

PLATINUM 2007



Q&A's following the presentation in London - May 14th 2007



The Johnson Matthey panel from left to right

Jeremy Coombes; Larry Pentz; Bill Sandford; Mark Bedford

Q1a: Jonathan Jayarajan – Analyst, Deutsche Bank.

You've talked about the penetration of palladium into diesel catalysis. What's the opportunity for palladium to get heavily into heavy duty diesel, maybe for Larry, I guess?

A1a: Larry Pentz - Johnson Matthey; Executive Director, ECT

Any penetration of palladium in the heavy duty diesel area will take time. It will be a predominantly platinum marketplace. But certainly the technology, like on the light duty diesel side, has the potential of heading into that 20% to a third range.

Q1b: Jonathan Jayarajan

Are we in that kind of range already, or is that going to be end of decade or well into the next decade we're going to come to that kind of loading level? I just want to get a time line of that.

A1b: Larry Pentz

It will take some time.

Q2a: John Reade – Analyst, UBS

A question about catalyzed soot filters in Europe. What proportion of diesel-powered vehicles is fitted with catalyzed soot filters in 2006, and what is your expectation for 2007?

A2a: Larry Pentz

Well, as you know, there is no requirement for catalyzed soot filters on today's diesel vehicle in Europe. And that requirement doesn't actually begin until 2009 and doesn't come into play on a full basis till 2010. That said, consumer demand as well as incentive-type programs, are bringing soot filters into the marketplace today. As a percentage, it's still a relatively low percentage, the low 10% to 20% range.

Q2b: John Reade

That's 10% to 20% for 2006, you'd estimate?

A2b: Larry Pentz

Yes.

Q2c: John Reade

Okay. And do you know roughly what the cost of a CSF adds to the price of a vehicle, order of magnitude, roughly?

A2c: Larry Pentz

I actually don't know the full cost. I know the cost of what the catalyst adds to it.

Q3: Ross Norman – Analyst, The Bullion Desk

Platinum jewellery demand is being squeezed out with these higher prices and incoming investment demand in the form of ETFs, although the volumes are relatively light at the present time. Is this a healthy development for the platinum PGM market, and how might it play out?

A3: Bill Sandford - Johnson Matthey; Division Director, Precious Metals

No question that platinum in jewellery has been squeezed to some extent. The ounces are down. You saw the numbers earlier on. Although I think, so far, that's really been squeezed out by the auto demand. Auto demand has gone up quite sharply in the last few years. If you go back about five years, there was much more platinum went into jewellery than into auto catalysts and now it's the other way round. And the car companies have no option, they have to use platinum. They've bid the price up: they have outbid the jewellery buyers. But overall, price has gone up and demand has gone up, which, as you say, is quite healthy.

As far as ETFs are concerned, I'm not sure it's fair, really, to just point the finger directly at ETFs. If you're asking my view as to whether they're good or bad, I would say that, on the whole, ETFs are just one version of a way of investing in metals. They make it easier to invest in metals and therefore that might well encourage more money into the investment pot. Investors have always been around. In some ways they do quite a good job of buying at low prices and selling at higher prices, so they're not all bad.

But, on the other hand, I think if too much money goes into investment in this market, then I think it does start to create problems.

My slight worry is that if the investment side of it becomes so large that it can distort the market, and this is an area which is very, very difficult for the mining companies to predict, that if they get it wrong, and it becomes more likely if the investment becomes bigger, then there's pain down the line, either for the producers or the consumers. So ETFs, make it easier for this investment pot to get bigger, but if it becomes too big I think is a problem.

Q4: David Russell – Analyst, Independence Platinum

I was wondering if there was any comment from the panel regarding the rising concern about PGM smelting capacity in South Africa, which has the ability to possibly interfere with future supply.

A4: Mark Bedford - Johnson Matthey; Marketing Director, Precious Metals

I think we've seen movements being made now to increase smelting capacity. There are a number of new smelters that have been announced. But, yes, I think it is a concern going down the track. You can see the possibility. I mentioned in the presentation the improved investment environment. Certainly, a couple of years ago, perhaps you wouldn't have asked that question insofar as a lot of the projects that we're seeing developed on the Eastern Bushveld were not likely to come to fruition. Now they are, it could be that smelting capacity does become a limiting factor. So, yes, it must be a concern going forward.

Q5a: Andrew Benson – Analyst, Citigroup

I was quite interested in your palladium price projections. You're talking about a second year of substantial surplus and yet the price staying up, or even going a bit higher. You'd have thought laws of supply and demand would act at some point. So I was just wondering whether you're just doing it from a nice marketing presentation or whether you actually think the price might - it just seems anomalous.

A5a: Bill Sandford

Yes. Well, I agree, it does seem to be defying gravity, really. But it is the case. There are some substantial surpluses but there is very heavy investment demand in palladium, thankfully, I think, to keep the price where it is. And if you look at stocks in Switzerland and use that as a measure, then they go up and up, and someone owns those stocks and they're part of a rather large investment portfolio which exists in the world.

You can look at it a different way as well. If you go back and look at our numbers, then in recent years there have been years when the Russian stock sales - this is just sales from stock, not mining metal - if you take those out of the equation, then over the last few years, actually, supplies have not been far off demand. The thing that's, if you like, distorted the market is that the Russians built up a rather large stock of palladium in the early 1990s and probably in the '80s as well, which they released when the price was high, fortunately, otherwise it would have been considerably higher, and in fact are still releasing now. If it wasn't for those stock sales, the market

actually wouldn't be too far off balance. And, in fact, there would have been years within the last three years when actually it would have been in slight deficit.

So the reality is, I think, that the stocks are just changing hands. The stocks are going from the Russians to investors. And underneath it, the physical market is carrying on, so they're not too far off balance. I don't know whether that answers your question. You're looking slightly puzzled. No?

Q5b: Andrew Benson

It just seemed, relative to what you're saying, an optimistic assumption of the price, unless you were to get a very, very substantial, dominating investor.

A5b: Bill Sandford

Well, we are extremely reliant on investment in palladium. No question of that, really. Metals have now become a real asset class of their own in a lot of pension funds; not just palladium, but lots of other metals as well. And if that investment were to increase or even decrease, then there would be some correction in the price, for sure.

Q6a: Steve Shepherd – Analyst, JP Morgan

I wonder if I could draw you back to palladium, if I may. The palladium market, I guess, has been quite confusing for some of us who have listened to you say for several years now that it's fundamentally oversupplied, or it's in surplus, and yet the price trend has been quite favourable. I wonder if I could possibly press you to answer a longer-term question. Do you foresee that fundamental demand for palladium is going to keep pace with primary supply growth?

Bill Sandford

Will the demand for palladium grow, in other words, because the likelihood is that supplies are not going to go down and, apart from Stillwater and North American Palladium, everyone else produces palladium as a by-product and therefore their supplies are not going to go down? Mark, do you want to have a go?

A6a: Mark Bedford:

I think, Steve, one of the factors that we have to bear in mind is that, in terms of South African expansion, clearly there's going to be more palladium produced per ounce of platinum produced, just by the nature of the ore bodies that are being mined. And that is something the market is going to

have to come to terms with. But, as Bill has said earlier on, we continue to be astounded by the appetite of the investment community, if you will, for palladium, and it should be able to deal with the amount of new palladium production coming forward.

I guess the one other thing that you'd say on the demand side is three years ago we had no significant demand for palladium jewellery, and then suddenly there's a million-ounce market. Now, who's to say there isn't something else like that out there that's going to address some of these surpluses that we can see going forward? I don't know what that might turn out to be, but certainly we shouldn't rule out the fact that the demand side will also grow, in ways that we just can't see at the moment. But that mining of new ore bodies is an issue in terms of the amount of palladium that is going to be produced.

Bill Sandford: No question. There is a lot of work going on, on palladium development, palladium development which would not have happened when the price was \$1,100. And certainly the more price-sensitive applications are potentially available again. And it is a case, as Mark said; jewellery demand was next to nothing. It was 4% six years ago, I think, of total demand. It's 15% now and you might well expect more things like that to come.

Q6b: Steve Shepherd I suppose, I guess where I'm coming from, if I could just follow up, please, I hesitate to suggest that investors are stupid. The point of my question was very simple. If the outlook for physical demand matches the outlook for primary supply, then it's not unreasonable to expect investors to keep putting money in. But if it's not that way around, I'm questioning whether they would be buying the metal. I don't know if you want to come back on that point.

A6b Bill Sandford

Yes. I think it is a concern. Why are they putting this money in there? Well, I think they're investing in metals generally, first of all, and palladium comes into that spectrum. But there are other people who are investing and I think the previous question alluded to it, really. People are investing in palladium because they see this large differential between platinum and palladium, and make the assumption that you can switch palladium for platinum in many different applications.

Now, in some of them you can, but most of those are going on already. The others, well, right now, you can't, but you should never say never, really. Go back to early 1990, auto catalysts were platinum and the rule of thumb was you can't put palladium in there, it doesn't work. And then, 10 years later, it's all gone. So, right now, there isn't anything in demand terms, to soak up that 1.4m ounces, but we'd never say never.

Mark Bedford

Just one last comment, Steve. I just think there's also an element of people investing in palladium because it looks cheap. And the other thing I think that is a factor is the amount of funds invested in PGMs compared with the total amount of funds under investment. This is still not a big deal in the overall scheme of things, in terms of the total investment market. And for that reason, although we might look at the minutiae of supply and demand, looking at the big picture in terms of the investment market, it still looks like a good bet to some people, I would imagine.

Q7: Henk de Hoop – Analyst, BGM

Probably over the last year the amount of pressure on car manufacturers to do something about global warming, bringing their carbon dioxide emissions down, has increased tremendously. Now, the only way to do it is build smaller engines that run more efficient. That's normally negative for PGMs. And there's a lot of work, I understand, being done on changing the way petrol engines are designed, for example, in the future and looking maybe at diesel hybrids. What's the net impact on PGMs, because I can imagine that there might be more emphasis on, say, platinum and rhodium in the future than what's on palladium, for example, looking at the different engine designs the car manufacturers are working on? What does Johnson Matthey see in the future happening there?

A7 Larry Pentz

You look at global warming and what could be the possible solutions to increase fuel efficiencies in automobiles, and certainly the diesel engine is one answer. There's a good part of the world in which diesel engines are a very low percentage of the total marketplace, so that's an answer to fuel economy.

Diesel engines would have a net positive effect on PGM requirement. There's more PGM in a diesel-engine vehicle than there is in a petrol-engine vehicle, so that's a positive to precious metal. You look on the gasoline side of things, yes; turbo-charged, super-charged type gasoline engines will shrink the size of the engine and subsequently require a less precious metal. Although there is a NOx trade-off as you begin to run smaller, hotter engines, so that will come into play and could require some precious metal. But, generally speaking, smaller gasoline engines will require less precious metal.

You go into the hybrid arena, whether it's diesel or gasoline hybrid, generally speaking, in a hybrid engine, the engine actually runs less often so it doesn't run as hot. Because the engine's not as hot, you need more catalyst to

realize the same effect because of the cooler running engine. So we would look at hybrids as a neutral situation from a PGM demand perspective.

And then I guess the last area, when you talk about climate change, you hear a lot about is the various bio fuels. And from a PGM demand perspective and the catalyst that's required in that sort of environment, it's broadly similar. It will require the same amount of precious metal in a bio fuel versus a current fuel today. So they are the four areas that you see climate change coming into play.

Bill Sandford

Or take it one step further and, of course, then you're on to fuel cells. And the development of hybrids is, if anything, it's positive for fuel cells. The likelihood is that you would leave the battery on there; substitute the internal combustion engine for a fuel cell, battery does a good job of collecting energy from braking, in which case of course that's more PGMs. There would be more PGM, for sure, in a fuel-cell engine than there would be in a regular internal combustion engine, but that's still quite some years off yet.

Q8a: John Reade

At the risk of sounding stupid, can you fit a catalyst to an airline engine?

A8a: Larry Pentz

Well, I've never tried. Certainly that technology is not a technology that exists today, but it would only be, what, 40 years ago that you would have said the same thing about the automobile. So never say never. That's certainly a possibility. But today that's not something that's being dealt with.

Q8b: John Reade

All right, so you haven't got any filters stuck on the back of jet engines out at Royston, no?

A8b: Larry Pentz

Not yet.

Bill Sandford

It's probably about the only vehicle that doesn't have them or will not have them soon. By the time we get into the next decade, lawnmowers and everything will have them. It's an interesting point.

Q8c: John Reade

And the shipping fleet, as well, I believe, is one area which is now beginning to attract a lot of attention, although that's the filthiest fuel in the world, I believe.

A8c: Larry Pentz

Certainly, yes. And marine and locomotive are areas that there's actually regulations and legislation that are on the books today that come into play in the latter part of this decade but really into the early teens, that will require fitment. In the 2012, 2014 area you'll begin to see fitment. But there's demonstration programs today on both locomotive and marine that's requiring after-treatment fitment. It's basically a NOx control solution and, yes, fuel has to be that way.

Q8d: John Reade

Just a last one, because my sales people in the States keep getting enthusiastic about fitting catalysts to lawnmowers. Can you confirm to me that the amount of PGMs per lawnmower engine will be rather small? I've had this argument about four times with them but . . .

A8d: Larry Pentz

There are a lot of lawnmowers in the U.S., yes, but it will be a small market and it will be some time off in the -- well, the early teens, again. But there's a lot of development to happen still.

Q9: Peter Cartwright – Analyst, Evolution Securities

Yes, you've mentioned the U.S. in a diesel context, perhaps for the first time for a few years, admittedly on medium duty, but do you see any more traction at the light duty end? What's your advance take on that?

A9: Larry Pentz:

You can speculate all you want. What we typically do is we go to those people that study the car market in the U.S. and you get that classic answer, 10% penetration from today's 3% or 4% penetration in the U.S. market, in the 2015 timeframe. That's the conventional kind of numbers you hear from those people that study. It has ranges, of course.

Q10: Yuen Low – Analyst, RBC Capital Markets.

I don't suppose you'd hazard a figure for U.S. heavy-duty vehicles PGM loadings?

A10: Larry Pentz

PGM loadings, well, it varies all over the place, so it's a difficult question to answer. It's mostly a filters market, but there is the odd NOx absorber in the marketplace as well. So it's a really difficult question to answer, I'm sorry.

Bill Sandford

For every truck, I think there's many ways to achieve the emissions levels. And some of them are very heavy in PGMs and some of them, like SCR, hardly any PGMs. So, across the range, I think it's impossible to be specific.

Q11a: Emma Townshend – Analyst, Merrill Lynch

Just generally over the next five to 10 years, with your view of demand, do you think the supply side response is sufficient to keep the market balanced?

A11a: Bill Sandford

Well, in palladium, clearly, yes. From what we see at the moment, I don't think we need to debate that too much. In the platinum market, well, I think yes. We can expect good increases in the demand markets, for all the reasons that Larry's been talking about, really, most of them associated with the expansion of diesel, one way or another.

And so there is good growth. Fortunately, as Mark said in his presentation, the investment scene in South Africa is very buoyant. There are significant reserves and, at these prices, people will be encouraged to exploit them. There's also encouragement, of course, from the government in South Africa. But our view is that these plans are well placed to meet demand.

Q11b: Emma Townshend

Do you think it's been slower than you would have expected, given the price rises over the last couple of years?

A11b: Bill Sandford

The mining expansion has been slower than we expected. Well, it was slower than people forecast, perhaps, back in the year 2000, but people are

catching up on that now. It's a difficult industry to make a quick change here but, so far, they've largely kept pace with demand.

Mark Bedford

I think what we've seen, Emma, and certainly in 2006, is some real momentum now behind the expansions that are taking place. I mentioned a couple of names in the presentation, Aquarius and ARM Platinum. There are others which I could have mentioned. We just simply didn't talk about those two or three years ago.

So it's coming. And, as Bill's already said, it's a lot more favourable in terms of the potential profitability of these operations than it was going back to 2000, when some of them were still being planned. The basket price of PGM has effectively tripled in that time and that's made a big difference to the outlook, I think.