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The Honourable / L'honorable
C. William Hourigan

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OLRTC (Ottawa Light Rail Transit Group General Partnership)

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--- Upon commencing on Thursday, July 28, 2022, at 9:29 a.m.

COMMISSIONER HOURIGAN: All right, good morning and welcome to an experts panel that we're putting on today to deal with issues of procurement. I'm going to turn it over now to Falguni Debnath who will be leading the proceedings. Thank you.

MS. FALGUNI DEBNATH: Good morning, Mr. Commissioner. Thank you.

My name is Falguni Debnath and I am the Executive Director of the Commission and I will moderate this panel today.

Before introducing the members of the panel to you, let me explain the purpose of the panel for the residents of Ottawa and other members of the public that may be watching. The purpose of this panel is to assist the Commissioner as he deliberates on making recommendations for the future. The experts will not provide specific opinions or draw conclusions regarding the facts and events of the Ottawa Light Rail Project Phase I. So the purpose of this panel is to have a general discussion on megaprojects and private-public partnerships.

Let me introduce the panelists to you. First, we have Professor Bent Flyvbjerg. He is the First BT Professor and Chair of Major Program Management at the University of Oxford. He is also Professor and Chair at the IT University of Copenhagen. Called the world's largest and leading megaproject expert, he has spent over 30 years studying why megaprojects fail and providing guidance on how they can succeed. His latest book, "How Big Things Get Done", will be available early next year. He joins us from Oxford, England.

Anne Stafford is Professor of Accounting and Finance at the Alliance Manchester Business School. Her research and work focuses on financial analyses of public-private partnerships with a focus on the taxpayer as public stakeholder and the importance of public accountability. She is a fellow of the

1 Association of Chartered Certified Accountants and a member of the British Accounting
2 and Finance Association. She joins us from Manchester, England.

3 Professor Matti Siemiatycki is the Director of the Infrastructure
4 Institute at the School of Cities at the University of Toronto. He is also a professor in
5 the Department of Geography and Planning. Professor Siemiatycki's work focuses on
6 delivering large-scale infrastructure projects, public-private partnerships, and the
7 effective integration of infrastructure into the fabric of cities. Professor Siemiatycki is
8 also a consultant to the Commission. He joins us from Toronto.

9 Regrettably, Professor Veronica Vecchi was unable to join us from
10 Italy today.

11 With that, let me turn to Professor Flyvbjerg to make his
12 presentation.

13 **--- PRESENTATION BY DR. BENT FLYVBJERG:**

14 **DR. BENT FLYVBJERG:** Thank you very much and thank you for
15 your kind introduction.

16 I'm originally Danish, working both in England and Denmark now,
17 and I started studying megaprojects back in Denmark 25 years ago. Denmark decided
18 to do the longest suspension bridge in the world and the second-longest underwater rail
19 tunnel in Europe at the time, and it went terribly wrong. So big disasters, in any way --
20 flooding, fire, and huge cost overruns -- and I was wondering, "Is that normal?"

21 I had just started my academic career not too long before that at
22 Aalborg University in Denmark and I thought this was a really interesting research
23 question. Like, are we just especially incompetent in Denmark or is this actually normal,
24 you know, that projects can go this wrong? And I looked around. At that time you'd go
25 to the library, actually, and try to find sources and things like this. So I went to the
26 library and talked with the research librarian and there was no information of this. This,
27 I thought, was pretty strange, you know, given the fact that trillions of dollars, even at
28 that time, was spent on big projects around the world but nobody had studied the

1 performance of such projects systematically.

2 Today, that situation is completely different because I decided, at
3 the time, I wanted to make a difference with my team at Aalborg and we started
4 systematically studying big projects. And today, we actually have data from more than
5 16,000 projects, so we have a lot of information now about what is happening on these
6 projects. And I've written 10 books about it a couple of hundred articles, so now we
7 have a solid knowledge base for talking about projects like this. So let's see what this
8 knowledge base is saying about projects.

9 And I'm going to divide this into three simple pieces, you know.
10 One is the challenges that projects like this, big projects, big infrastructure projects --
11 the causes of the challenges. So, why do they perform the way they do? And then,
12 what can we do about it because clearly something needed to be done about it, as you
13 will see from the data that I will be quoting.

14 So if we look at sort of the overall law that we have uncovered, I
15 call it the "Iron Law of Project Management", and it goes like this: over budgets, over
16 time, under benefits, over and over again. And that's the Iron Law of Project
17 Management or Projects. That's how projects perform on average. So on average,
18 they go over budget. On average, they're over time; they take longer than expected.
19 On average, they deliver less benefits than projected. And this happens over and over
20 again.

21 We have data going back more than 80 years. There's no change
22 in this over the 80 years for which we have data for, which is pretty interesting if you
23 think about it. Most things we do, we get better at over time, but not delivering big
24 projects.

25 Now, let's look at some numbers, especially for rail, because this is
26 a hearing about rail and even more specifically about urban rail. So this iron law, what
27 does it look like for urban rail? Well, if you decide to do a urban rail project, you have a
28 70 per cent risk that you're going to go over budget. So 70 per cent. That's your odds;

1 it's like going to the casino; if you decide to play the game of building urban rail in the
2 casino, you have 70 per cent odds against you that you'll be able to do it through the
3 budget that you have.

4 How big are those cost over-runs? Well, on average the cost over-
5 run for an urban rail project is 40 per cent, so 4-0 per cent, 40 per cent. And this is
6 measured in the most conservative way we can measure it. So measured from the final
7 business case, not some early business case, and measure it in real terms, so real
8 prices, not in current prices, so not including inflation.

9 If you chose an earlier business case, if you included inflation you'd
10 get a much larger number than the 40 per cent that I'm quoting here, but 40 per cent is
11 actually bad enough if you think about it. It means that if you had a \$1 billion budget, it's
12 going to be \$1.4 billion instead, and that's on average, meaning there will be some that
13 are much larger than that.

14 For schedule, the mean schedule over-run, the average schedule
15 over-run, is 43 per cent, so about the same as the budget over-run, and the benefit
16 shortfalls are 23 per cent. So actually for rail, this is measured like 23 per cent of the
17 passengers that are in the present forecast actually don't show up on the trains on
18 average. So you are 23 per cent short on passengers which means that you would be
19 short on revenue of course. So if this is a revenue fine on this project, you will have
20 financial problems, especially when you combine it with the cost over-runs, and that's
21 actually what we see on project after project, is financial problems.

22 So even if some problems are actually technical successes,
23 technological successes, they can be and they often are financial disasters.

24 Another way to look at these numbers, if we want to get again the
25 likelihood that you actually delivered something on budget, on schedule and on benefits,
26 so three out of ten rail projects are on budget or better. So three out of ten. If we
27 require to be both on budget and on schedule, all of a sudden it's three out of a 100. So
28 only 3 out of a 100 rail projects actually deliver to budget and to schedule or both,

1 meaning that 97 per cent will actually be either over-budget or over-schedule or both.

2 And then finally, into choosing the benefits, so requiring all three
3 things being on budget, on schedule and on benefits, which means being on the
4 passenger forecast here, this is two out of a 1000. So only two out of a 1000 rail
5 projects actually deliver on all three things. So deliver it to budget, to schedule and to
6 benefits are all three of them.

7 So very few projects are doing this. 99.8 per cent will either be
8 over-budget, over time or under benefits on this account. So as we can see, if you
9 decide to build rail projects, you have the odds against you basically. That's the
10 situation.

11 Often people think that it's only for them, that this is something we –
12 is basically bad. So in Denmark at the time I started studying big projects, Denmark
13 and officials in Denmark thought that, hey, Denmark must be really bad at this and
14 nobody knew whether other countries were similarly bad. Today we can say this is a
15 global problem. We haven't found one country, one government that actually knows
16 how to do this. We haven't found companies either. So this is both the private and the
17 public sector, so it's not something government is basically bad at, the private sector is
18 also bad at this. It's also not just for PPPs, so three "P's" as it's also called, "PFI", it's
19 also for tradition, procurements, and it's in all geographies, like I said.

20 So, you know, the good news is, you're not alone if you have
21 problems with a big project. In a way that's also sad news because it means that it is a
22 very wide-spread problem and we need to do something about it.

23 But before we talk about what to do about it, let's talk about what is
24 it that causes this very clear pattern in the data, so this very clear pattern that we call
25 the "iron law". And this is something when we test it statistically, it's significant and
26 unusually a high level of significance that you almost never find in human behaviours.
27 So things we do as humans are usually noisy and messy and therefore it's difficult to
28 establish high level of statistical significance. That is not the case why the iron law

1 unfortunately has very high statistical significance. So you can pound on it. This is your
2 odds if you're doing a big project and the odds are what I just called it for, rail projects.

3 So what's causing this? That's the next question. And here I like to
4 distinguish between causes and root causes. And often when you hear experts talk
5 about this, they would just talk about the causes and not the root causes. And actually
6 in a lot of the literature you will find that people would say, well the project became more
7 expensive because the scope changed. We actually ended up having to deliver more
8 projects than we thought we had and we hadn't anticipated that, so the budget went up
9 because we had to put in, you know, a more advanced safety system or a more
10 advanced signalling system or whatever.

11 Another classical explanation on the causes is, well, it was the
12 geology, is the geology stupid as they say. As soon as you start digging a hole in the
13 ground you run into things that you didn't expect and with many projects you actually
14 have to dig holes in the ground and you run into things that you don't expect.

15 All of a sudden you have a sink hole that you didn't expect, you
16 didn't know the geology would be so that there's a sink hole. This is a classic, you
17 know, in anything that involves big digging. Or you hit a archeological site that the law
18 says that you actually can't just know – bore through if you're boring a tunnel or
19 whatever it is you're doing, or bore through an archeological site. You need to stop
20 everything and then you need to chart what's on – you need to bring in the archeologist
21 to get a proper review and audit of the archeological site and connect the items and put
22 the items in storage where they can be safe and you can use them in museums and so
23 on for research later.

24 So those are just examples of causes, what happens. It could be
25 the price of labour goes up. It could be the price of steel or concrete, which are main
26 ingredients in most construction projects goes up and so on. These are causes and
27 unexpected things happen. We all know that that's the way life is and when these
28 unexpected things happen, well, it actually turns out that for big projects usually these

1 unexpected things are negative, and it's not like – there's not too many positive things
2 happening to projects like this. The prices go up, they don't go down usually. The
3 geological is worse than you thought, there are more sink holes than you thought or
4 there are sink holes and you didn't expect or, you know, things like this.

5 And these are all valid explanations but I would say that they don't
6 get to the root of the problem. Because if you look at it, it would keep underestimating
7 the problems or scope changes over and over and over again. It's actually not the
8 scope change that is the problem, it's our assessment of the scope change that's the
9 problem, that we are unrealistic about the scope changes. We think there would be
10 fewer scope changes than there actually is. The same with the geology.

11 We assume, well, on this project we don't have – we won't have
12 any big geological problems, no sink holes, no archeological sites or very few, and we
13 have this contingency in the budget for that. Well, lo and behold, surprise, it actually
14 turns out that that contingency is not enough because there will be more things, you
15 know, regarding geology and archeology, et cetera than what we had expected.

16 So that is – the problem there is not the geology, it's not the
17 archeology, it's our assessment of the geology and the archeology. So it's all in here,
18 right? It's our estimate of these things that goes wrong. That's what I call a "root
19 cause". When you get the issue wrong, that's the root cause. So the problem is not
20 that your budget goes over actually, that's not the problem even though that's what we
21 keep saying is the problem. The problem is, that we under-estimated the risk of the
22 project – or the budget going over or the schedule going over. So we under-estimate
23 risk. That's the problem, that's a root cause.

24 And why do we do that? So why do we under-estimate risk? Well,
25 for different reasons, and that's what I call the "root causes". One is confidence of
26 buyers, so we actually – our brains are wired in certain ways and one way for instance
27 is, that luckily we have to say most of us are optimists. That's a good thing. It makes
28 us get up in the morning, it makes us get married, it makes us get children and so on,

1 and it gives it “a can do attitude” when we are doing projects, which is very important.
2 You don’t get anything done if you don’t have optimism. But, “Hey”, if you’re optimistic
3 about the wrong things, that’s not good and we happen to be. So we are blanket
4 optimists. So we will be optimistic about anything, you know. But just imagine yourself
5 getting on a plane and you hear the second pilot say to the first pilot, “First Pilot, I’m
6 optimistic about the fuel situation.”

7 Do you want to get on that plane? I don’t think so. You don’t want
8 to get on a plane that’s optimistic about the fuel situation. You want a pilot that’s certain
9 about the fuel situation, that is certain that they have the fuel that will get you to your
10 destination so you don’t run out of fuel in mid-air, right? Well, the budget is the fuel of
11 the project. So you actually need project leaders that are certain about the fuel
12 situation, about the money for their project before they start. And as we saw from the
13 numbers, that is very much not the case.

14 In 70 percent of cases, the money is just not there for urban rail
15 projects, that is. And it varies from project type to project type but the general picture is
16 the same. And actually, urban rail is not even the worst project type that we are
17 starting. So things like nuclear power or big hydro dams -- I was actually an expert on
18 the Muskrat Falls dams a few years ago in Canada out by Muskrat Falls that had similar
19 problems. And dams are worse than rail.

20 So there are other -- I’d see, as the worst of all, I’d see is like you
21 probably know that if you've been involved in IT projects that they perform even worse
22 than rail projects. So rail is not even the worst but it’s bad enough, as we can see. And
23 it’s because people are optimistic at the outset. So you're optimistic about what your
24 project is going to be like, how you're going to deliver it, and so on.

25 So that’s one root cause is optimism bias, as we call it. And it’s
26 something that we are born with, and also socialized into. So we are hardwired, it
27 seems, so that’s what behavioural scientists who study this, and who study the brain
28 directly, you know, when we’re making different kinds of assessments, estimates and

1 decisions. They say that we are hardwired to be optimistic. Certain parts of our brain
2 are simply programmed to be optimistic about things for evolutionary reasons. There
3 are good reasons for this, like I said. It's just that if we use it in the wrong context it
4 becomes a problem. So that's cognitive bias.

5 Another type of bias is something I call strategic misrepresentation
6 and that's what I would call a political bias when people play politics with projects. So if
7 people think tactically, you know, how am I going to get my project approved? Oh, I
8 actually got an idea here. I'm going to make it look cheap on paper and generating
9 many more benefits than it likely will. But if I underestimate the cost on paper and
10 overestimate the benefits on paper, my project is going to look really good and it's going
11 to be the project that gets funding.

12 That's something we call strategic misrepresentation. And it's
13 deliberate. So optimism, like I explained before, is a cognitive bias. It's something we
14 are born with or socialized into it. And that is not deliberate. This is something we do
15 whether we think about it or not. We actually -- we are optimistic. And you will be able
16 to catch yourself and if you start thinking about this after we're over with this hearing,
17 and start to think about your daily actions and so on, like you estimate how long is it
18 going to take you to get downtown or how long is it going to take you to write this
19 assignment, or report, or whatever you're working on. And you will again and again
20 see that you are optimistic. And you don't do it -- you're not deliberately optimistic. So
21 that's the big difference between optimism bias and strategic misrepresentation. They
22 are both there but one is deliberate. That's strategic misrepresentation and people do it
23 on purpose. And the other is not deliberate; people happen to do it whether they want
24 to or not because they are programmed to.

25 So those are two root causes. And very interestingly, just recently
26 social psychologists have started to study the interaction between the two and they
27 actually find that people with a lot of power -- and that's both in private organizations
28 and public organizations. So people with a lot of power, minister, executives in the C

1 suites in private companies and so on, actually have more cognitive bias than people
2 who don't. So power bias and cognitive bias reinforce each other. So the more
3 powerful you are, the more likely you are to have lots of cognitive biases and also the
4 more likely you are to practise political bias. So you get this vicious circle where these
5 biases are growing, the higher up you get in the organization.

6 So for instance, the minister who wants to build a monument to
7 herself, that's an example of political bias and puts pressure on the organization to get it
8 built. That's an example of this. And then everybody starts internalizing and become
9 very optimistic about this project, you know. And not even thinking about it. It's
10 deliberate. So you get this interaction between these biases.

11 A couple of additional biases that might be worth mentioning is
12 uniqueness bias and overconfidence bias. So for projects, our research has actually
13 shown -- this is a paper we have in the pipeline right now. It is that many project
14 managers and planners suffer from uniqueness bias. They think their project is unique.
15 It's something you would hear over and over again if you work on projects. "My project
16 is unique," or "Our project is unique. There is no other project like this ever."

17 That's dangerous. Because we've found that the more people think
18 like that, the worse their projects perform. So the more you think your project is unique,
19 the worse performance you will have. So the larger project overruns, the larger
20 schedule overruns, and the larger benefit shortfalls you will have. And the data support
21 this.

22 It's not so difficult to understand if you think about it. If you think
23 your project is unique, you think you don't have anything to learn from other projects.
24 It's not even worth it, looking at other projects. That's actually often what happens.
25 Incredible as it may sound, on a lot of projects the project planners and the project
26 managers don't look to other projects because "Our project is unique."

27 Well, that means that a lot of very very useful data and knowledge
28 are not being used in planning and delivering the project. And of course it's going to

1 perform worse if that's the case. And that is the case; that's what happens. So that's
2 uniqueness bias. It's a bad thing. I always tell people, project leaders, so the people
3 who are in charge of a project, if you hear anybody say, "Our project is unique", you
4 either need to fire them or re-educate them. Send them to Oxford or to Copenhagen for
5 re-education so that they can get these bad habits out of their system because it's a
6 very bad an expensive habit to walk around thinking your product is unique. And we
7 have the data to document that.

8 So that's uniqueness bias.

9 Overconfidence bias is actually a sub-type of optimism bias, so it's
10 people who are overconfident. And again there is a link between power and cognition
11 here. It turns out that the more powerful people are, so the more powerful positions
12 they are in, the more overconfident they are the more overconfident decisions they
13 make. And that's something to think about. So you need to keep an eye on those
14 people in power if you want to have realistic projects. That's a lesson that we can see
15 from our research.

16 A final thing about uniqueness bias is that actually -- and this is
17 very discouraging actually. But the big project management organizations like PMI in
18 the U.S. or the Project Management Institute, and APM which is the similar institution in
19 the organization in the U.K., the Association of Project Management -- but also when we
20 look at Japan and other places. Define projects as unique. So you will actually see that
21 these organizations define what is a project. They say, "A project is a unique
22 endeavour to ..." whatever, accomplish something. It's really unfortunate. It means that
23 we are teaching project managers to think of their projects as unique. And our most
24 important organizations who are doing a lot of training of people -- they actually hammer
25 into their head of the practitioners who take their courses, "Think of your project as
26 unique." That's about the dumbest thing I've seen any professional organization ever
27 do.

28 So you can see if you're doing a project and you think about it as

1 unique, it's a recipe for failure because if you think of it as unique, like I said before, it
2 means that there's not a lot to learn from other people.

3 My advice is to look at projects as we look at people, you know.
4 There's a famous philosopher who once told her student, "Remember that you are
5 absolutely unique, just like everyone else." That's the way to think about projects, you
6 know. They are unique in the sense that there is only one; you know, there's only one
7 high speed rail line in California, for instance. There's only one urban rail system in
8 each city where they are and cities don't build them that often.

9 So in that sense, in time and geography projects are unique. But if
10 you look at it globally, there are dozens and dozens and hundreds of projects like that in
11 almost no matter what you building. We've actually set ourselves the challenge of
12 finding truly unique projects. And if you try the same, it's very difficult. If you really try
13 to do it and have the requirement -- like, "unique" means that it hasn't been done before,
14 so there's no precedence.

15 And there are almost no things like that, not even putting a man on
16 the moon, the Apollo Program. People talked about that as unique but, actually, the
17 project managers, they were very smart. They said, "It's not unique. We have fired
18 more than -- you know, we have fired 270 rockets like this before. We have lots of
19 experience. This is just another -- this is just another space flight. There is this little
20 problem of getting somebody down from the space vehicle to the moon, and that is
21 different, but that's the only thing about it."

22 So it turns out that very few projects are unique and we should
23 always think about there's something to learn from other projects. That's really the
24 important thing here, that we're throwing out lots of good information if we don't do it like
25 this.

26 So finally, like I said, I was going to look at challenges, causes, and
27 cures. We've looked at the challenges now, the Iron Law -- over budget, over time,
28 under benefits, over and over again -- the causes being, first, a set of conventional

1 causes, but then root causes, which are behavioural bias. And behavioural bias is both
2 cognitive bias and political bias. So that explains the Iron Law, that these biases
3 actually drive the cost overruns, and drive the schedule overruns, and drive the benefit
4 shortfalls.

5 So now the question is cures. And if we just end briefly with the
6 cures, the first we need to do is improve the funding of the projects. So very often, the
7 business case that a project is built on is very flimsy. It's classic. So you need to
8 improve the business case. And one way of doing that is to debias. I just explained
9 that the problem is bias so obviously we need to debias decisions, and we need to
10 debias our business cases.

11 Our business case is optimistic. We need to get that optimism bias
12 out by debiasing. And we developed methods for that. One is called Reference Class
13 Forecasting and another is called Tech One Management. And we actually like to use
14 these two methods in combination to get a much more realistic idea about what is the
15 project going to cost, how long is it going to take, et cetera. So that's one thing you
16 need to do.

17 The other thing we've found is that you need to make projects more
18 modular, so they need to be much more like Lego that you can actually assemble a
19 project by some standard components, and you need to stay very far away from
20 anything bespoke. You don't want to do bespoke. Bespoke is slow and expensive and
21 generates cost overruns. Modular is fast, and agile, and will you keep the costs down
22 and stay to your budgets. So that's the other thing.

23 And the thing about speed is incredibly important. There's a very,
24 very strong correlation between how long a project takes and how big the cost overruns
25 are. So the shorter you can make a project, the small cost overruns you will have.
26 That's a really an important thing to remember. And modularity is going to help you be
27 speedy.

28 So that's one thing, that's designing the thing up front, how do you

1 do that? Then there's the thing about execution. We find that most projects don't have
2 early-warning-sign systems. So you need an early-warning system to know when
3 projects start going wrong very early. It's very important. And we find that on most
4 projects it takes forever. Nobody wants to bring the bad about things going wrong to the
5 project leadership. Most organizations have a culture where bad news are unwanted.

6 The kind of culture you want for a big project, including an urban
7 rail project, is a culture where bad news is encouraged because there's going to be bad
8 news on any big project sooner or later, usually sooner, actually, and many times over.
9 So, as the leader, you want to know about this as quickly as possible so you can
10 mitigate the problem. Otherwise, the problem is going to snowball and become bigger
11 than it would to have had to have been. So early-warning system is a thing that you
12 need in order to deliver better projects.

13 You also need an incentive structure that makes sure that the
14 people who are delivering actually have an interest in delivering. You shouldn't expect
15 people to deliver what you want and to deliver if they don't have an incentive to do it.
16 And that's both positive incentives and negative incentives. Many projects have the
17 problem that they only operate on the basis of negative incentives. We like to have
18 what we call "a symmetrical incentive structure" where there are both positive incentives
19 and negative incentives so that the contractors are actually in the position where they
20 might more money, more profit, if they deliver to budget, and to time, and the benefits
21 that they were supposed to deliver, but also that they get punished if they don't, so they
22 don't make as much money if they -- or even have to pay fees, you know, penalties if
23 they don't deliver. So that's an incentive structure.

24 So on the execution side, you need an early-warning sign and
25 incentives, and not least, something that we have developed both here in the UK, and in
26 Hong Kong, and in Australia, and other countries that are beginning, is leadership
27 training. So we have something we call "the Major Projects Leadership Academy" at
28 Oxford University which I cofounded in 2012 on the initiative of the UK Government.

1 Their infrastructure and projects authority, which was called the Major Projects Authority
2 at the time, contacted me in 2012 and asked whether I'd be interested in developing this
3 program with them. And with Oxford University, I said yes, and we developed it. And
4 today, we have more than 700 top civil servants go through this program. And what we
5 are trying to do is simply bring project management skill at this level back into
6 government.

7 It turns out that the UK Government had made the mistake of
8 outsourcing all these things so at the time, in 2012, they realized that all these PPPs
9 and PFI, as it was called at that time, has actually resulted in us farming out very key
10 skills to running a government and we are losing those skills, and the government
11 realized that wasn't a good idea and it would be better if we could start developing those
12 skills again. So that was one aim of the MPLA, as we call it, Major Projects Leadership
13 Academy, was to get those skills back into government, and also get world-class project
14 leaders, so leaders at a very high level. This involved creating a career structure for
15 those leaders.

16 Today, in a lot of government, it's actually more prestigious to be a
17 generalist than a specialist. That's not a good idea, you know, because it means that
18 project managers are usually considered specialists so they don't have the prestige in
19 the organization as the generalist, so the UK Government decided to change that and
20 create a career structure where it would be just as prestigious to run these very big
21 multi-billion pound projects in the UK as it would be to be, you know, a paper-pushing
22 generalist around governments. So that's another thing that was built into this.

23 And, you know, training people in procurement, how do you do
24 procurement right. Training people in stakeholder management, how do you manage
25 stakeholders right, where, given the enormous amount of stakeholders at a very high
26 level that are involved, needs a major program? And also, how do we train people in a
27 way where they can actually do this over and over again so it's not only one project --
28 that's not good enough, you know. You can be lucky with one project -- but actually

1 have the skills where you can do this over and over and over again. And that was also
2 a goal here.

3 So summing up for cures, get the funding right and get delivery
4 right using the things that I just illustrated. And looking at all three -- challenges,
5 causes, cures -- that pretty much gives you an overview of what the issues are here,
6 what causes the issues, and how to deal with them. Thank you very much.

7 **MS. FALGUNI DEBNATH:** Thank you, Professor Flyvbjerg.

8 Let's turn to Professor Siemiatycki to give an overview of P3
9 projects in Canada. Professor Siemiatycki will also be presenting a PowerPoint
10 presentation.

11 So, Mitch, if I can ask you to bring that PowerPoint presentation
12 onto the screen. Thank you.

13 **--- PRESENTATION BY DR. MATTI SIEMIATYCKI:**

14 **DR. MATTI SIEMIATYCKI:** Good morning. Thank you so much.
15 What a pleasure to be with you to speak about public-private partnerships and the
16 experience in Canada. It's a pleasure to follow Professor Flyvbjerg who has really set
17 much of the tone and has led in this area on megaprojects and challenges with delivery
18 and how to resolve them. And so I think this is a really important context that now
19 allows us to drill in more specifically on public-private partnerships.

20 Public-private partnerships, or P3s, or PPPs, have been used in
21 Canada now for going on 30 years. We have an extensive record and history and, in
22 many ways, public-private partnerships were to resolve some of the challenges around
23 misaligned interests that Professor Flyvbjerg talked about in procurement.

24 Now, what I'd like to do in this presentation is provide some
25 definitions of public-private partnerships because this is a bit of an expansive term and
26 it's important to understand exactly what we're speaking about. And then I want to talk
27 about the rationales and debates for public/private partnerships. Because the rationales
28 and debates for this model of project delivery have varied by jurisdiction and they've

1 also evolved over time. And so it's important to understand why these projects were
2 being delivered through public/private partnerships. And then I'll zero in specifically on
3 the Canadian experience with public/private partnerships.

4 We have a lengthy experience and it has also varied over time.
5 And it's important to recognize at the outset that public/private partnerships themselves
6 have been an contentious area of policy. They've often been both heavily promoted as
7 a way to resolve project delivery challenges, and in some cases to reshape how
8 government delivers major infrastructure and even the role of government in society.
9 So folks have promoted public/private partnerships for some of those reasons, and yet
10 they've also been hotly contested as a backdoor approach to privatization and in some
11 cases, also ways of challenging organized labour.

12 So there is a long history of contestation around this concept. And I
13 think it's important then to frame the discussion and understand where we're at – where
14 we've come from and ultimately where we're at, and perhaps look into the future of
15 where things are going now with public/private partnerships and project delivery.

16 Next slide, please.

17 So Canada sits within a global trajectory of public/private
18 partnerships. Public/private partnerships have become a truly global phenomenon.
19 Public private partnerships in their current iteration originated in the United Kingdom in
20 the late '80s and into the 1990s and then very quickly spread around the world. They
21 were called private finance initiatives in the U.K. and Professor Stafford will talk in more
22 detail about the U.K. experience.

23 But the important point for us is they spread very quickly and
24 Canada became one of the adopters of this model of project delivery. To date we've
25 delivered over 250 projects, either fully delivered or in the pipeline. So these are
26 projects that are operational, and we're into the hundreds of billions of dollars of
27 infrastructure that have been delivered through this model.

28 The first generation of projects as we'll talk about a little later, have

1 focused on roads and water systems and then more recently we moved into social
2 infrastructure, like hospitals and court houses and in some cases schools, and now in
3 the very recent period, civil infrastructure like major road projects and public transit has
4 become a major sector for public/private partnerships as well.

5 When I talk about public/private partnerships, I'm talking about a
6 very specific type of long-term bundled form of public/private partnership, and I say that
7 to differentiate from wider approaches to collaboration because there have been clearly
8 at the municipal level in particular, there have been longstanding collaborations to
9 provide social services between non-profits and government or between the private
10 sector and the public as well.

11 ; What we're really talking about here, is a very specific form of long-
12 term infrastructure contract, which I'll get into more detail in a little while.

13 And Canada is recognized globally as a very sophisticated market
14 place for public/private partnerships. Over the years we've built up institutions to
15 support public/private partnerships. There have been P-3 agencies like Infrastructure
16 Ontario and Partnerships B.C. and PPP Canada which I'll talk about in a little while.

17 So on the public sector side we have created institutions to support
18 this model of project delivery. We've created a template to try to standardize some of
19 the approaches to public/private partnerships, and we also have a very extensive
20 private market place of firms, from legal firms to accounting firms, surveyors,
21 contractors, who have very quickly become among the leaders in delivering this
22 approach to public/private partnerships.

23 So on the public sector side and the private sector side Canada has
24 become quite a sophisticated market place. Also with the legal regimes and contract
25 structures in place, to enable this approach to project delivery.

26 And so at the same time as public/private partnerships have gained
27 popularity over time, as I mentioned, they've also been hotly contested at all orders of
28 government and in many countries around the world. And it's – again, it's important to

1 recognize some of the contours of those debates which we'll get into as well.

2 Next slide, please.

3 So what I want to do, is first try to provide some definitions, and the
4 theory of public/private partnerships. Why would a government approach a project and
5 look to deliver a project through public/private partnerships. And, what I'll show, is that
6 again in many ways this is a response to major problems with project delivery,
7 misaligned interests and incentives and poor performance over time. And Professor
8 Flyvbjerg's research has helped highlight those challenges and has led to people
9 around the world looking for innovative approaches of which public/private partnerships
10 are one.

11 Next slide, please.

12 So as I mentioned, when we say "P-3" or "public/private
13 partnership" or PPP in the infrastructure context, we're really talking about a very
14 specific approach to contracting. This is – we call these in the academic literature, "long
15 term infrastructure contracts". And to use a common definition by Garvin and Bosso, a
16 P-3 is a long-term contractual arrangement between the public and private sectors
17 where mutual benefits are sought and where two things have to be the case. The
18 private sector provides management and operating services and/or puts private finance
19 at risk.

20 So this is what – the definition is very specific around these two
21 points. One, is around – that it's a long-term arrangement. These are not just
22 necessarily very short term contracts. And second of all, that there is private finance
23 involved and that that private finance has a risk factor to it, that it's at risk, meaning if
24 performance occurs, then the private finance is returned with a return on investments.
25 And if performance is not met, then there are consequences and that can lead to a loss
26 of capital for the investors.

27 The important point then, is that at least from the definitional
28 perspective, that public/private partnerships are different than the two other main ways

1 of thinking about long-term infrastructure delivery. One is outright privatization, because
2 privatization has no long-term contractual arrangements. Typically privatization, the
3 private sector would build and then own and operate the infrastructure. It might be
4 regulated. They might receive a subsidy from the government, but it's privately owned,
5 privately managed, privately operated in perpetuity.

6 So at least in its purest form, public/private partnerships are not
7 considered the same as privatization. And similarly they're different than traditional
8 procurement where private finance is not typically involved.

9 So to provide a bit more detail, in the traditional procurement in
10 Canada, and traditional procurement varies in different countries. But in Canada we
11 have typically used a model called "design bid build", "DBB". And what happens in the
12 design bid build model of infrastructure delivery, is the government will hire an
13 architecture firm or an engineering firm, depending on the type of asset, and they'll work
14 with that firm in order to design the facility to meet their desired goals and specifications.
15 And so the government will work very closely with that architecture firm or engineering
16 firm.

17 And once the facility is designed to its fullest, that design will then
18 be put out to tender and companies will bid to deliver it at the lowest cost. That's why
19 it's called "Design Bid Build", because those functions are separate, the design and the
20 bid and the build are separate.

21 And then typically once the project – the government will pay for the
22 project, they'll usually select the lowest cost bidder, and once that bidder builds the
23 project, at the conclusion of the project the government can either operate it, which is
24 typically what has happened in Canada, or they could alternatively contract out that
25 operation of the facility when the facility is over.

26 And what we find in the design bid build, is that there can be a
27 misalignment of interests in that model of contracting. Because the person who designs
28 the project is not necessarily the one who's building the project. And so there can often

1 be – if the project – if there are disputes about the design of the project, then, especially
2 since the government works closely with the designer, there can be a request for
3 change orders, and that can be one place where costs start to escalate.

4 Second, the private sector doesn't have what's often called "skin in
5 the game" during the construction. They don't have any of their own private capital at
6 risk and so if things do start to go wrong, they can often come back to government and
7 ask for more money. And if you're in the situation where it's a rail project, and it's a
8 giant tunneling project down the centre of your main street and the government – and
9 the contractor comes back to government and asks for more money, it can be very hard
10 to dispute those claims and it can delays projects.

11 So the lack of skin in the game, as it's know, can create a
12 challenge. And then also there's not necessarily the long-term incentive for the
13 designer to design the project with operation and maintenance in mind because their
14 incentive is perhaps more short-term and focused on the construction period because
15 they're not going to be around to have to operate and maintain it. So that can be a
16 challenge for the person who designs it and ultimately the person that -- or the firm that
17 is going to be responsible for building it.

18 So this dis-aggregated model of project delivery then can really
19 have these issues of misaligned interests built into the contract. And we have had
20 absolutely challenges with traditional procurement. There was a project here in
21 Toronto, the most recent major rail project, a subway project that was built. It was an
22 extension of the Spadina Subway Project into York Region. And that project had a very
23 significant delay and cost overrun, and some construction accidents along the way as
24 well.

25 So there's no doubt that traditional procurement is not perfect and
26 has faced challenges over time. And so the public/private partnership to explain how
27 this model works -- it's much more of a bundled approach. It aims to bundle various
28 parts of project delivery -- Design, Build, Finance, Operate, and Maintenance -- into a

1 single contract that then creates both the alignment of interest between the parties in
2 the contract and the pay for performance type of mechanism.

3 The contractor will -- the government will put forward output
4 specifications for what they -- or performance specifications for how they would like the
5 system or the goal they would like the system to achieve. And then various consortia
6 will bid on those -- to provide the best way of delivering that solution. So there's much
7 more flexibility for the private sector to come forward with innovations. And also,
8 especially when the project includes Design, Build, Finance, Operate, and Maintenance
9 in the job, there's an incentive in the contracts to align the upfront design with making
10 sure the project is buildable with making sure that it can be operated at the lowest cost.

11 And if the way that the repayment takes place is that the contractor
12 only gets paid based on the facility being available and meeting expectations, then
13 there's a pay for performance system built into the way that that bundled contract
14 ultimately works. So the theory is that by bundling all of those functions and including
15 private finance that's at risk, the contractor has skin in the game and a real incentive to
16 perform or else they don't get repaid their initial investment.

17 The next slide, please.

18 So there are a whole variety of public/private partnership models
19 that are on a spectrum from greater public responsibility to greater private responsibility,
20 ranging from design build finance where it's more of a shorter term contract where
21 finance is only at play during the construction period and then it's paid out when that's
22 over, all the way up to Design Build Operate Maintain, or Design Build Finance Maintain
23 which is often used for transit projects where the government wants to maintain the
24 actual operation role but the infrastructure itself is maintained privately. Or Design Build
25 Finance Operate and Maintain where the whole system is in a bundled contract as it
26 was done with the Canada Line.

27 And so the key variables to understand what the public/private
28 partnership is, there's really three key functions to understand. First is the bundle. So

1 which functions are in the deal.

2 Second is what risks are actually transferred, and there's three key
3 areas of risk -- construction, availability, and demand. So construction risk is the risk
4 that you're going to have problems during construction. Availability is that the system
5 actually works the way it was intended and meets its performance objectives. And
6 demand is that the number of patrons or users or revenue actually occurs like was
7 forecast.

8 Now, typically in Canada we focus on construction and availability
9 risk and we have not transferred demand risk as much to the private sector.

10 And then the final point is the payment mechanism. So how does
11 the private sector recoup their initial investment? And in Canada most of our systems
12 do not included user fees that would cover the full cost because most of the projects
13 have been hospitals or court houses or in some cases schools or public transit projects
14 which don't recover all of their investment through user fees. So instead what happens
15 is the government pays an availability payment as long as there is enough money, as
16 long as specific performance objectives are met.

17 So that gives a sense of how the payment mechanisms are built
18 into the system. And this is often quite different than traditional procurements where
19 again once the contract is let, the contractor is paid provided certain targets in terms of
20 construction are done. And as long as the inputs are met, then the contractor is being
21 paid, and once the system is operational then it's typically operated by the public sector
22 in the Canadian context.

23 Nest slide, please.

24 So I want to talk a little bit about the P3 partnership structure
25 because the word public private partnership often implies that there is a single
26 relationship between the public sector or one agency or government department and a
27 private sector company that is going to deliver the project. So the word "partnership"
28 often -- and public/private -- often seems to entail or connote that there's going to be

1 just this single public to private partnership. But in fact, behind these arrangements is a
2 much more complex set of relationships and partnership structures that help deliver the
3 project.

4 So let's start with the public sector side. Usually there's one
5 agency or department that's responsible for the project but they may be getting advice
6 from a whole host of different agencies or departments across governments. And then -
7 - and they may also be hiring , and they will inevitably be hiring firms, professional
8 service firms like legal or accounting or finance to come in and help them with the
9 project delivery and deal structuring of that project. So the public sector side itself may
10 have many inputs that's often channelled through one office or department.

11 The private sector side is also quite a complex structure of different
12 organizations. So we typically think of the P3 structure as working with consortia rather
13 than a single firm. And so the firm will create what's called a special purpose vehicle to
14 manage the relationship directly between -- manage the concession agreement with the
15 public sector. So that's a special purpose vehicle. And it's a company that is formed
16 exclusively to carry out this specific project.

17 And Professor Stafford can talk more about the accounting
18 treatment. But these firms are typically limited liability companies that are developed
19 only for the specific project and there's typically not recourse to the parent companies
20 for any significant liabilities that may happen down the road or beyond the initial
21 investment anyway, into the project. So it's not that they're not liable but it's that they've
22 capped it at what their investment is in that specific company.

23 Then underneath that special purpose vehicle again is a set of
24 subcontracting relationships. Typically one contract is with the Design Build project
25 firm, so a firm that may or may not be part of the initial consortia. They will do the
26 Design Build and they may then subcontract even further. And then there can be a
27 facility operator that also is subcontracted by the project company or the special
28 purpose vehicle to deliver the project, to deliver the operations of the project if it's a

1 public/private partnership. That includes operations and maintenance.

2 And then there's also debt and equity investors. And these are
3 very important because the finance in the public/private partnership is really considered
4 the glue that holds the deal together. This is where the incentives come in, and
5 especially the debt investors, whether it's bonds or debt, they are outsiders to the deal.
6 And they provide a really important external scrutiny role.

7 When Professor Flyvbjerg talks about an outside view in some of
8 his research or taking a reference class and looking at and trying to manage optimism
9 biases, these are investors who take an outside view. They are not necessarily internal
10 to the consortia team. They're scrutinizing the deal to see if this really makes sense
11 and if the team has the expertise to actually deliver the project.

12 And so they play a very important role as trying to provide a
13 counterweight to some of the optimism that may come in if it's just an internal team or
14 just the government which may have either it's own optimism biases or in some cases
15 its own strategic rationales for moving a project forward. And then there are also equity
16 investors, and the equity investors take on very significant risks and they often – and
17 equity investors then often have – look for higher rates of return because they are taking
18 on much more significant risks.

19 And in Canadian public/private partnerships the debt to equity ratio
20 at some point has been ten per cent equity, 90 per cent debt, and in some cases it's
21 been lower – slightly lower than that, down to 85 or 80 or even 70 per cent equity and
22 debt.

23 But these tend to be – deals with a whole lot of debt and often a
24 fairly small amount of equity where the equity stakeholders really have a significant
25 financial capital at risk there.

26 Next slide, please.

27 So I want to spend a few minutes and just go through some of the
28 rationales and motivations and play out some of the debates that have happened in the

1 Canadian public/private partnership marketplace. And so some early rationales for
2 public/private partnerships were to raise private money to deliver infrastructure and to
3 move money off the public balance sheet so governments could essentially buy now
4 and pay later.

5 And for the most part, the “buy now – pay later” rationale has not
6 been a driving force in Canada and I would say that’s generally positive, that we
7 shouldn’t be doing infrastructure – selecting project delivery mechanisms because of
8 their accounting treatment, we should be selecting them because they deliver great
9 infrastructure. And even raising new money, most of the infrastructure in Canada so far
10 does not have user fees that – at least public infrastructure – does not have user fees
11 that cover the full cost. Think of our roads or our hospitals or our schools, the types of
12 areas are court houses. The types of areas that we’ve used public/private partnerships
13 have not tended to be in revenue-generating areas. So we’re not using those as the
14 key rationales here in Canada for the most part. Rather – and we’re also not typically
15 using it to completely restructure public service.

16 There have been arguments over time about the role of the state
17 and the role of the private sector in public service delivery and that – those have been
18 arguments and around issues of privatization.

19 More recently, as I’ll show in a few minutes, that has not been
20 necessarily the case here. So what are the main rationales for public/private
21 partnerships? There’s really – there’s really four. One is to stimulate innovation
22 because you have this bundled contract where the firm who’s involved upfront has an
23 incentive to innovate because if they innovate, they may be able to save costs and
24 make their bid more competitive and deliver a higher quality service. And by doing so,
25 they have a higher chance of winning the bid and then operating the project.

26 So innovation has been one rationale. The big one is around risk
27 transfer and a desire to transfer risk from the state, or from the procurement agency, to
28 the private sector. That has been a really important rationale. The governments, for all

1 the reasons that Professor Flyvbjerg talked about, are very reticent to take on projects
2 that are highly complex – aware there's a huge chance of over-runs and so there's a
3 desire to transfer risk from the public to the private sector through these type of deals.

4 Another rationale that's become more popular for a while, was ring
5 fencing money for long term facility operations and maintenance. Everyone likes to
6 rush to the front door to cut ribbons on building new projects, and then once they're
7 operational, it can be harder to get money for long-term operation and maintenance.
8 And so signing long-term contracts can lock in that operation and maintenance period.
9 And then finally, the-pay-for-performance model is relevant too, that the private sector
10 has real risk capital at stake. And so with that capital – with the capital at stake that
11 they have, they only get paid back if the money actually – if the project actually achieves
12 the objectives. And if not, there's real private capital that the government doesn't have
13 to go and try to mitigate to assign penalties, that the private sector has invested in
14 capital in the project and that can then be recouped through the pay-for-performance
15 model.

16 So those are the rationales. Really at the more technical end of
17 this, it's really to drive innovation, to transfer risk to the private sector and to encourage
18 a pay-for-performance type of model of project delivery.

19 Now it does bear noting and we'll get into this in a few minutes, that
20 public/private partnerships also have a political dynamic to them that we can't overlook,
21 that transferring risk to the private sector has a real political advantage. Politicians and
22 governments hate cost over-runs. They are hugely embarrassing and they do bring
23 down governments when they're big enough and public enough and messy enough. So
24 the desire to transfer risk from the public to the private sector can be a hugely attractive
25 rationale for doing these types of projects from a government and political perspective.

26 Now, when we get into the concerns with public/private
27 partnerships as well, you start to see where some of the challenges are, that
28 public/private partnerships can be more costly than delivering infrastructure through

1 traditional methods, primarily because of the higher cost of private finance and also the
2 potential for windfall profits.

3 There are instances where the private sector can flip their equity
4 stakes and make significant profits which can be both – that come at the cost of the
5 public and also can be quite embarrassing for government, but more importantly is this
6 idea of – that public/private partnerships are not a cheap model of project delivery, but
7 they may deliver value. And I'll explain that momentarily.

8 I want to focus also on the contractual obligations because when
9 you sign a design, build, finance, operate and maintain style or P-3, that locks in that
10 arrangement for, in some cases, 30, 50, even in some cases 99 years. And it can mean
11 that the infrastructure – the inflexible. If we want to expand the infrastructure later on, or
12 even make changes to the facility itself, because you have a contract in all types of
13 renewal of the infrastructure and that's outside of the contract, has to be negotiated with
14 one operator who is already on site and already has a long-term contract for that facility.

15 So the risk of lock-in is very significant and we've seen that on
16 transit systems internationally and in some cases, in Canada too.

17 Then there's challenges with high transaction costs, that to
18 structure one of these deals is very complex. It requires a team of lawyers and
19 accountants and finance people on both sides of the deal. And so putting in a bid for
20 one of these projects can cost millions of dollars and it requires a huge amount of public
21 investment too, to oversee the procurement process and the project delivery. So the
22 transaction costs are quite high.

23 I want to talk about data and confidentiality, because once you
24 have the private sector more involved, commercial confidentiality can come up, and that
25 – and data can often be withheld from being put in the public domain, especially at the
26 time when it's most needed to make decisions.

27 So issues around meaningfully consultation in the absence of
28 transparent data can be a real challenge. Incomplete contracts mean that even what's

1 on paper can then – there can be gaps when events and unexpected occurrences
2 happen, or risk materials that were unexpected, so that can be problematic. And also
3 the idea of outsourcing labour, this has been a concern that some of the jobs on these
4 projects may have been done in-house and the job may have been unionized or paid at
5 a higher rate than in the private sector. So some of the concerns around public/private
6 partnerships, especially in the early days, were around this idea of the impact on labour.

7 And then, finally, that government is the residual risk holder of last
8 resort. Ultimately if things go wrong, to a major extent it's going to be government that
9 ends up having to pay out and resolve the problem later on.

10 Next slide, please.

11 So I want to explain this idea of “value for money” because it's
12 central to how we understand whether you should deliver a project through a traditional
13 build or a public/private partnership.

14 Often times you'll hear people say that public/private partnerships
15 are a cheap way to do infrastructure or in delivering a public/private partnership
16 because it's going to save money. And that may be true, but it's demonstrated through
17 the research that public/private partnerships are not an upfront cheap way of delivering
18 infrastructure.

19 What I've showed here, is a comparison of the costs for a
20 traditional build project and a public/private partnership. And this is how we would
21 compare the two.

22 So you have the base costs of building and operating the facility.
23 Those are called the “base costs”. You have transaction costs. You have financing
24 costs and you have retained risk. And what you see in these images, is that the base
25 costs are actually higher for delivering a project through a public/private partnership
26 because there are costs associated with bundling. Then the transaction costs are
27 higher for a public/private partnership because you have all the lawyers and the finance
28 and the accountants that are involved, and then you have the financing costs. And the

1 cost of private financing can be, depending on when the deal is done, significantly
2 higher, and that can add tens or even hundreds of millions of dollars to a project.

3 So the question is why, from a financial perspective, would ever do
4 a project through a public-private partnership? And the answer in almost every case
5 that we've seen in Canada is risk transfer, that the project -- that the government is so
6 concerned about this idea of how much they are ultimately going to have to pay in risk
7 for cost escalations or to fix facilities that don't ultimately function very well that the risk
8 transfer is seen as the major driver of the value for money in the deal. And this has
9 been shown in research that I've done and also in research by the Auditor General.

10 So in the absence of understanding risk, you would find that it's
11 cheaper to do a project up front through the traditional model. But when you factor in all
12 of the risks and the way that those can be borne by government as compared to the
13 private sector in a bundled public-private partnership contract, then the government
14 studies suggest that that's better to do, that it's a lower cost or better value to deliver
15 through a public-private partnership.

16 So the best was to think about this is actually that a public-private
17 partnership is not a cheap way to deliver infrastructure but it's rather like having an
18 insurance policy against risks materializing. Just like you would do with your house, you
19 pay insurance, an insurance policy, in the eventuality -- in hoping that nothing happens
20 but, in the eventuality that something does happen, that it's an insured risk and your
21 insurance company will handle that risk and pay out. Similarly, with a public-private
22 partnership, it's the same mentality, that the government pays more up front to transfer
23 risk to the private sector, and those risks are meant to be then handled through the
24 contract; if risks that were in the contract materialize, that the private sector will handle
25 them. And one of the big questions is whether risks that are transferred on paper
26 actually get handled in practice when they occur or whether they reverberate back to
27 the government through -- once -- if they get to a scale that's too big for the private
28 sector to bear, and that's the idea of the public sector being the risk-holder of last resort.

1 Next slide, please. So let me just give a quick review of what's
2 happened in Canada just to give some perspective on our experience in this country
3 with public-private partnerships.

4 Next slide, please. So we can really differentiate two waves of
5 public-private partnerships, and I'll just go over this at a very high level and people can
6 review the slides in more detail later on. But the key is that, at a very high level, there
7 was a first wave of public-private partnerships that essentially aimed to tap into the
8 private sector to do as much as possible in the delivery of infrastructure and it tried to
9 transfer as much risk as possible and as much responsibility as possible to the private
10 sector. The goal was essentially to try to deliver high-quality infrastructure without
11 taking on public debt. This was through the '90s and early-2000s. We have projects
12 like Highway 407, the Confederation Bridge, Fredericton and Moncton Highway. There
13 was a Nova Scotia Schools P3. And this period of public-private partnerships was -- we
14 can say that it was more ideological, that there was a sense in the sector that the
15 private sector firms working in market conditions were really in the best place to deliver
16 infrastructure efficiently, and more efficiently than government, and so there was an
17 ideological bent to this period.

18 And what we found during this period was actually there was a lack
19 of up-front assessments, that there was often limited government expertise. These
20 projects -- just like Professor Flyvbjerg was mentioning, these projects were delivered
21 by individual departments without necessarily the broad fold of government or project
22 management expertise that they learned over many projects. There was poor
23 transparency and accountability, in some cases very high profit margins, and public
24 opposition to user fees, and contract instability for many of these contracts. So this was
25 not -- this period faced a lot of backlash about both the ideological nature and some of
26 the performance of public-private partnerships and it spawned, then, a second
27 generation, which is where there was big ramp up of public-private partnerships.

28 Next slide, please. So government responded to the failures of the

1 first wave by creating public-private agencies across the country, first, Partnerships BC,
2 then Infrastructure Ontario, then PPP Canada at the federal level, and these agencies
3 had a dual role of promoting and supporting delivery of public-private partnerships. And
4 it's quite important to recognize that these were public-private partnership agencies.
5 They were not infrastructure-delivery agencies. They were not necessarily to do
6 projects of all types of infrastructure, but they focused very specifically on the P3 model.

7 We also encouraged a P3-first model. The industry was highly
8 supportive in promoting P3s. There was a rebrand in Ontario of public-private
9 partnerships. Actually, they chose a term called "alternative finance and procurement",
10 AFP, so they really tried to shift the focus away from this term P3, which kind of had
11 been tarnished in the public eye from that first wave. And also, Ontario in particular,
12 welcomed the world of market players into this jurisdiction and companies from around
13 the world started to practice P3s in Ontario.

14 Next slide, please. So in this period, public-private partners
15 became driven by the idea of innovation through the bundled contract, risk transfer in
16 particular, but the idea of risk transfer to the party best able to manage it rather than
17 necessarily as much risk to the private sector. There was a recognition that not all risk,
18 especially demand risk, but also some of the construction or operation risk, not all of
19 that could be transferred to the private sector. And so this saying, "risk transfer to the
20 party best able to manage it", became much more popular.

21 And then, finally, a real focus on on-time and on-budget, that this
22 was the problem that P3s were really meant to solve, that government had a problem
23 delivering big projects effectively and the P3 agencies were going to bring that
24 expertise. They were going to learn from past experience; they were going to
25 standardize some of the processes and the legal documents; and they were going to
26 create a pipeline of projects and a deal flow to enable these projects -- and a
27 marketplace that would have stability to try to then drive improved performance.

28 And what we saw during this period is that P3s typically were

1 considered on-time, certainly on -- close to on-budget, and on-time-ish, was how it was
2 often said. And then, also, once the projects were operational and they went through
3 ramp-up period, they tended to at least work up to their performance standards. But of
4 course, there have been challenges with this model.

5 The value for money -- the Auditor General, in 2014, found that the
6 Government was paying a very high price to transfer risk. On the 74 projects that they
7 studied in 2014, they found out the government paid \$8B up front to transfer risk to the
8 private sector and that that risk number could have been reduced if governments could
9 manage projects and manage risk rather than transfer risk. So that's, of course, a very
10 big question, an open question, whether that could be achieved, but the government
11 was paying a very high insurance premium, if you will, to protect and achieve on-time
12 and on-budget performance.

13 There also have been -- as these projects have gone on, there
14 have been a high cost of litigation, and transaction costs, and bidding costs. These
15 projects are hugely expensive to bid on. The government and the private sector has to
16 hire many people. Those are the transaction costs. And we've seen recently that there
17 has been a fair amount of litigation, both between the private sector parties, each other,
18 and also between the government and the private sector.

19 One of the other questions is whether P3s were the only game in
20 town. Like, was it only possible to get money for your project if you delivered it as a P3?
21 And given all of the different institutions and policies that came into place, many at the
22 municipal level in particular started to feel that this was the only way that they could get
23 money for their projects, was to deliver them through a P3.

24 Now, others will say -- and we did interviews about these topics --
25 others will say that, actually, it was one amongst many, but the policy landscape with
26 the P3 screens -- that's at any project over \$50M had to go through a P3 screen to see
27 if it could be done as a P3 -- plus the value for money model, plus the P3 agencies, all
28 of those started to lead to this question, at least, of whether P3s were the only game in

1 town. And for many projects, especially in Ontario, for most projects over -- very large
2 projects over \$100M, we see in the transit sector, we see in the healthcare sector,
3 almost all of those were going down the P3 route. So really, P3s became the model of
4 choice and a question about the perception of whether they were the only game in town
5 if officials wanted their projects funded and supported.

6 Another question is around the sources of innovation and where
7 innovation is really coming from and whether it's revolutionary innovations that really
8 make the project better or smaller-scale types of innovations that maybe lower the cost
9 but also lower some of the potential benefit. A study we did looking at innovation in P3s
10 found that a lot of it came from shrinking the size of the facility to make it just right so
11 that it could meet the performance specifications but be as small as possible within the -
12 - while still meeting performance specifications because you can save costs on building.

13 Another way is around materials. And maybe the materials that are
14 chosen are ones that can be maintained but are not necessarily the most attractive
15 materials. And then architecture and design and whether we're really building attractive
16 facilities or facilities that are just good enough and meet the minimum public expectation
17 of what a public facility should be.

18 Confidentiality has continued to be an issue and whether there's a
19 sufficient transparency of information. And in particular the information that's needed
20 around financing and the financial details of the deal as well as the long-term terms of
21 the deal. That's also been a question.

22 More recently we've seen real procurement challenges so I showed
23 the on-time and on-budget performance from 2015. The transit file in particular has
24 started to pose real challenges for P3s across the country and you are seeing a number
25 of challenges starting to arise there. This issue around long-term flexibility and control
26 over the asset and changes, that any changes to the facility later on starts -- once the
27 contract is signed and in its operation phase, starts to get very expensive to make and
28 they're negotiated with a single private operator or maintainer of the facility.

1 And so that provides somewhat of an overview of the tensions and
2 challenges that have started to crop up in public private partnerships.

3 Next slide, please.

4 I want to focus for a moment just on transit projects. Can you go to
5 the next slide, please? Yeah, this one.

6 So transit public private partnerships -- that is the topic of this
7 inquiry. It's useful just to examine them at a nationwide scale. There was a lot of
8 excitement around transit public private partnerships and that this could help address
9 both get projects built and also address some of the challenges of cost overruns and
10 delays in particular that have occurred on projects in the past. And the first project was
11 the Canada Line; the first big transit project was a big automated light rail project in
12 Vancouver called the Canada Line, connecting downtown Vancouver with the southern
13 municipality of Richmond and the airport. And that project, while it had a very turbulent
14 planning phase with a lot of questions about whether the P3 was the right model as well
15 as the route and the construction technology that was used, once it was selected, the
16 project was considered successful. It was built on time and on budget. And once
17 operational, the ridership has actually well-exceeded expectations. And now the big
18 concern with that project is whether they can expand it to meet growing ridership, and
19 ridership that is really over time is going to push the capacity of that system.

20 So that project was deemed generally successful. And so, but
21 more recently, the more recent projects across the country have faced very similar
22 challenges around construction, cost escalations, and significant delays. And you see
23 that quite universally across the country with the Eglinton Crosstown, the Edmonton
24 Valley Line, REM, Waterloo, Greater Vancouver, and Ottawa all facing to varying
25 degrees construction challenges on these major infrastructure projects, and the P3
26 model struggling to achieve, to bring the incentives and that bundle and that risk capital
27 at stake, really struggling still to deliver both the punctuality of the project and in some
28 cases the budgets starting to rise as well.

1 Now, it should be noted, and I mentioned it off the top, that
2 traditional projects have faced some of these same challenges. And so you know, this
3 is not -- that these big projects and transit in particular, because they're in busy cities,
4 because they often include an underground component which is just highly risky -- this
5 have just been hard projects to deliver. And each of these models., the models that we
6 have used especially recently have really struggled in terms of efficient and effective
7 project delivery.

8 But most of the projects nationally, once they're operational and
9 once they go through their ramp-up period, they have worked. The systems do operate
10 typically as expected. And we'll see with some of the newer ones coming on line if that
11 goal is met. There are a few here that are still under construction. But the ones that
12 have been built so far nationally, once they go through their construction, even if that
13 construction had challenges, once they go through that, the system tends to operate, to
14 work fairly well. But there can be problems in terms of expanding the system and
15 upgrading in terms of extensions when you have a long-term contract.

16 And so in fact, in some cases like the Evergreen Line in Vancouver,
17 actually they used a Design Build Finance model that has a much shorter -- that doesn't
18 have an operation period so that it can be better integrated into the existing system as a
19 whole.

20 Next slide, please.

21 So where are we going, is kind of -- is there a third wave on the
22 horizon? There has been some degree of dissatisfaction with public private
23 partnerships both from the public and the private sector side of the equation. So on the
24 public sector side, many of the P3 agencies that were real promoters of P3s in the early
25 days have kind of been quietly transitioned to be more general infrastructure agencies
26 to help across all models, and Infrastructure BC is a good example of that.

27 And even Infrastructure Ontario has started to take on a much
28 wider role in procurement, not just be involved in public private partnership projects.

1 And also, P3 Canada was folded and more recently the Infrastructure Bank was
2 created. So there has been some step-back institutionally that P3s institutionally are
3 going to be the model that is really the primary approach to delivering these big
4 projects.

5 Companies have also stepped back. There were some
6 international companies that left the marketplace and most notably more recently SNC
7 Lavalin said that they would not take part in fixed price types of contracts.

8 We've see also the separation of P3 deals, breaking them up into
9 smaller chunks and using a Design Build Finance technique rather than the full bundle
10 of Design Build Finance Operate Maintain. And Ontario in the Toronto context has
11 really started to unbundle some of these contracts and break them into smaller pieces,
12 recognizing that these very large Design Build Finance Operate Maintain contracts can
13 start to pose challenges in terms of finding enough competition in enough firms with the
14 private capital at stake to be able to bid on those big projects.

15 The P3 screen was removed but it's not to say that we're stepping
16 back from the role of the private sector. And the infrastructure bank in particular is
17 going to consider playing that role.

18 And finally, there's been an interest in what's called the Alliance
19 Model. This is a model that has come from Australia and the U.K. and is becoming --
20 there's more interest at least in this model here in Canada.

21 Next slide.

22 So just very quickly on the Alliance Model, this tries to break down
23 the idea of a special purpose vehicle at the core of the P3 and instead creates a joint
24 company or a joint organization that includes all of the contractors and the public sector
25 working in a much closer alliance, and really picking up on the word "partnership" and
26 "collaboration", or an alliance much more so than the long-term infrastructure contract
27 model of P3 which is really more contractual rather than a genuine partnership.

28 This brings them together in a single company at the core to try to

1 deliver with pain share and gain share. If the project goes well, and it's delivered better
2 than expected, they share in the gain. And if there are problems then all of the parties
3 share in the pain. This is widely used in New Zealand and Australia and the U.K.; it is
4 not widely used in Canada and British Columbia now is running a pilot project with one
5 of their hospitals. So we'll learn more, and we do need to learn more about this model
6 before we decide what to do.

7 So to wrap up, last slide, please.

8 Urban transit projects tend to work best when the government
9 retains long-term control over planning and system integration and flexibility to extend
10 the system. That much we've learned internationally and through the Canadian
11 experience. We also understand that more recently the goal is to optimize private
12 finance rather than maximize private finance, that the goal is -- that really that the
13 private finance is there to help glue the deal together and create those incentives, and
14 that that's the role it should play especially from both a cost and a risk perspective as
15 well.

16 Then we learned about risk transfer and being very clear about
17 which risks can be transferred and recognizing that government will play a role as a
18 risk-bearer of last resort, and understanding then which risks to transfer.

19 Procurement agencies, in my view, should be broad and have a
20 broad mandate rather than a singular mandate. We need expertise, as Professor
21 Flyvbjerg mentioned, on both sides of the deal. Disputes between -- and so that means
22 training and capacity building plus agencies who have expertise and do deals on a
23 repeated basis. But they should not just be P3 focused. They should be very broad so
24 that they provide support on all types of deals.

25 The key is to deliver great infrastructure, not just great P3s.
26 Disputes between the parties are cropping up and they are very serious, and they take
27 litigation, and they can become quite expensive for all involved.

28 And finally, alliancing is becoming more popular and is something

1 we should look at, but we do need to practice it and try it in our own jurisdiction. We
2 have a different planning culture and a different legal culture than certainly the way we
3 practice than in other jurisdictions, and we need to make sure that this idea of alliance,
4 which sounds phenomenal, working in deep collaboration with each other, can actually
5 follow through in practice when projects run into trouble themselves.

6 So I will pause there. Thank you very much, and I look forward to
7 our discussion later on. Thank you.

8 **MS. FALGUNI DEBNATH:** Thank you so much, Professor
9 Siemiatycki.

10 Mr. Commissioner, this would be a good time to take a break.

11 **COMMISSIONER HOURIGAN:** All right. Let's take 10 minutes.
12 Thank you.

13 --- Upon recessing at 10:57 a.m.

14 --- Upon resuming at 11:08 a.m.

15 **COMMISSIONER HOURIGAN:** All right. I think we should be all
16 set to begin, so let's proceed.

17 **MS. FALGUNI DEBNATH:** Thank you, Mr. Commissioner.

18 Let's turn to Professor Stafford to talk about public accountability.

19 **--- PRESENTATION BY DR. ANNE STAFFORD:**

20 **DR. ANNE STAFFORD:** Okay. Thank you very much. Thank you
21 for the opportunity to contribute to this Panel.

22 As I was introduced, I'm a Professor of Accounting and Finance at
23 Alliance Manchester Business School, part of the University of Manchester in the UK.

24 I've been researching PPPs in the UK for around 20 years now,
25 since the turn of the century, and for about when the -- some of the earliest PFI projects
26 in the UK first became operational.

27 So as an accounting and finance specialist, my research is focused
28 on examining the financial information, and particularly, the publicly available financial

1 information, the linkages between them, and supplementing that work with interviews
2 with key financial managers.

3 My particular interest has been in looking at this from the
4 perspective of public stakeholders, particularly taxpayer, and looking at the cost to the
5 public purse from the perspective of public stakeholders. So I have a particular concern
6 there for the public accountability of PFI projects.

7 So in terms of early work at the time was undertaking when we
8 were first looking at the impact of PFI in the UK, I focused on -- particularly on the
9 additional cost of finance and value for money issues.

10 But more recently, I've been seeking to address a range of
11 questions around public accountability for a PFI project. So these sorts of questions,
12 what reporting and disclosure do we need for public accountability; to what extent does
13 the way in which PFI projects get reported provide that public accountability; do we
14 have sufficient guidance about governance relating to PFI projects, especially in relation
15 to information advice from the private to the public partners; and finally, has our
16 reporting support stakeholder engagement, public access, and external scrutiny at all
17 stages of such long-term projects?

18 Because I started investigating PFI projects just at the point where
19 they became operational, looking at the operational stages has therefore been of
20 particular interest. We have heard earlier on this afternoon about a lot of the problems
21 relating to the construction stage, but of course, in a PFI project, which is a long-term
22 contract lasting, as we've heard, for up to 99 years, obviously, it's the operational stage
23 which is much longer than the construction stage, and therefore, we should also be
24 making sure that we allocate sufficient resource to monitoring and evaluating that stage
25 of these projects as well.

26 In terms of my research, whilst I don't have the science of database
27 that Professor Flyvbjerg has access to, my findings show you that relevant governance
28 mechanisms do fall short in provision of public accountability. And I'll make some

1 recommendations as to how we might consider improving that later on in this
2 presentation.

3 So I'm going to be focusing on four areas, some of them fairly
4 briefly, so I'm just going to give a brief history of British PFI projects as a comparison to
5 the Canadian perspective given by Professor Siemiatycki, and then I'm going to talk
6 about three areas related to financing and accountability, so further hidden costs in
7 relation to these three financing, why then, if the money is just a complex and difficult
8 concept, particularly when we try and evaluate it; and then I'm going to focus towards
9 the end of the presentation on how and why it is so difficult to achieve public
10 accountability in relation to P3 projects.

11 So looking at a brief history as a comparison to the Canadian
12 experience, in the UK, it's a similar sort of story at the start. The turn to PFI was a later
13 part of the extensive public services reform, starting in the early 1990s, but carrying on
14 from the extensive privatizations carried out by our Conservative government in the
15 1980s.

16 Early PFI in the UK largely took the form of what we've had
17 explained to us by Professor Siemiatycki, the DBFO project, former, the design, build,
18 finance and operate projects, although really, although they're called DBFO in the UK,
19 really, I think they are DBFOM, because the maintenance element is also in there.

20 And the policy of PFI in the UK had two key objectives. First of all,
21 policy was going to bring in the additional capital investment from the private sector, and
22 second, it was going to create this value for money for the public sector.

23 And the way that this was vouched in the UK is that value for
24 money would be achieved in two ways. We've got the transfer of risk in associated
25 costs from the public to the private sector, and secondly, the value for money was going
26 to also be delivered by the greater expertise, efficiency, and innovation that the public
27 sector is assumed to possess over and above what the -- sorry, the private sector is
28 assumed to possess over and above what the public sector was able to deliver.

1 Interestingly, in the UK, after a slow start from the Conservative
2 government, after 1997, a later government took up PFI and implemented a very large
3 number of projects over a relatively short period of time, and there are now 704 PFI
4 projects in the UK with a capital investment value of 57 billion. Out of that, around
5 about 70 projects across the UK, 60 in England, are transport projects, with a total
6 capital value of about 7 and a half billion.

7 But these figures do exclude Metronet, which was the London
8 underground project, and by far the largest transport project with an estimated cost of 7
9 billion. This is excluded because this project went into administration with relevant cost
10 of the project being taken back under public sector control by the end of 2010.

11 In relation to light rail schemes, the UK does have a number of light
12 rail projects, but we have found that using PFI has proved a challenge, and most
13 schemes are now operated by the relevant local government transport body although
14 with outsourced operating and maintenance contracts. This has been the case in
15 Manchester where I am based, where Manchester Metro – which originally did have
16 some PFI elements on some of its lines, those have been now taken back under local
17 government control and, as I say, operating and maintenance contracts outsourced by a
18 range of short term contracts to other parties.

19 Since 2012 the U.K. has replaced its PFI policy with an upgraded
20 version, PF2, which has been designed to overcome some of the criticism of PFI and to
21 encourage better partnership working between the public and the private sectors.
22 However, take-up of PF2 has been very low.

23 In 2018 the conservative government announced that PFI as a
24 policy, was going to be scrapped. So in terms of then moving on to look at my research
25 findings over the past 20 years in relation to the public perspective, as I say, I focussed
26 on financial and accountability perspectives from the point of view of the public
27 stakeholder.

28 So talking briefly then about the hidden costs of PFI financing,

1 we've heard from the earlier presentations about the over-run on costs in relation,
2 particularly to the construction stage and other aspects related to unanticipated events
3 happening during the construction stage. But my points relate to the hidden costs of
4 financing on top of these cost over-runs.

5 So when we studied the first operational DBFO rates in hospitals in
6 the U.K., we find that the cost of private finance was even higher than expected, and at
7 the same time the tax revenues compared to the business cases, were considerably
8 lower than expected. So for early projects, in the early operational stages, finance rates
9 were coming in at around about 11 per cent and 9 per cent instead of the figures in the
10 business case that were coming in at 6 per cent and tax revenues were coming in at a
11 mere 7 per cent rather than the 22 per cent in the business case. And the transaction
12 costs, which we've also heard, tend to be extremely high in these cases, these were
13 also much more than initially anticipated.

14 A further area where we found that there were additional
15 unanticipated costs were in relation to monitoring activities. There was an assumption
16 in terms of business cases, but there would not be any need for monitoring activities by
17 public sector parties. So the private sector would be left to carry out operational and
18 maintenance activities and the public sector would just accept the costs of those
19 activities and accept the performance data provided by the private sector.

20 In actual fact, we found that public sector partners had to carry out
21 a large range of additional monitoring activities to make sure that the contracts were
22 being complied with. Some of these costs were substantial. They did vary across
23 different sectors. For example, in hospitals, additional monitoring costs were much
24 higher in relation to roads. But these costs, of course, were not included in the initial
25 value-for-money calculations..

26 In addition, we've heard from Professor Siemiatycki about the
27 complex operating structures of projects with the special purpose vehicle acting as a
28 shell company with related – sub-contracting to related companies. And obviously

1 these made each time that a sub-contract is issued, it builds in additional profit margins,
2 because each company of course has to deliver a return. It's very difficult for the public
3 stakeholder to see what these profit margins are, how they are being defused between
4 the special purpose vehicle and any related parties, and additional profits therefore
5 remain opaque. We were able to calculate for early projects that profits seemed to be
6 very high. The more recent projects we do see evidence of learning in that revised
7 standard contracts have sought to restrict these very high returns.

8 Moving on to considered value-for-money in PFI, is a really difficult
9 concept to evaluate. We've heard that it's not clear that it's effects had been practiced.
10 We can call it perhaps an intuitively plausible but ambiguous concept. And we've heard
11 from Professor Siemiatycki about how it is calculated. Just to recap there, measured by
12 comparing the discounted whole life cost of the project with conventional procurement,
13 doing this places a value on the risks that are being transferred to the private sector.
14 And value-for-money of course is achieved if overall discounted cost is less than the
15 cost of conventional procurement.

16 But there's a huge range of problems in relation to this model, to
17 doing the calculation of value for money. Firstly, it's based on forecasts. We heard
18 from Professor Flyvbjerg about the relative optimism bias. So forecasting is often going
19 to be over-optimistic. It can also include errors. And because with PFI projects we're
20 doing estimates of costs for future services and risks, which at the very best I'm certain
21 over a long period of time. The one thing we can say about the forecast is, that they are
22 going to be wrong. We just don't know how wrong they're going to be.

23 In addition, in the U.K. it is widely recognized that there are some
24 flaws in the methodology calculating value-for-money for the business case. It's
25 obviously known to be malleable and subject to political influence. In the U.K. PFI was
26 the only game in town, therefore unless the VFM calculation or "value for money"
27 calculation delivered the PFI, the project just would not go ahead because the accepted
28 assumption at the time was that there was no public money available for these capital

1 projects. Therefore, it was clearly a really high incentive to manipulate value for money
2 figures to ensure the PFI also was returned. And too much importance was placed on
3 risk transfer.

4 So it's very hard for members of the public to see value-for-money
5 calculations because they are kept commercially confidential. But we do know that
6 there's a very mechanistic way in which the calculations for which transfer are carried
7 out. And, therefore, arriving at a suitable figure for calculating the risks, is assumed to
8 be an objective calculation. However, take into account all the risks, particularly in
9 relation to the political risk involved, it becomes much more of a subjective
10 consideration, and it's really not possible to incorporate all of that into a quantitative
11 VFM model.

12 Furthermore, after implementation, it's then very difficult to
13 empirically determine in financial terms, that a project was delivered value-for-money.
14 So in order to do this properly, we would need to do a calculation over the whole life of a
15 project with a comparison to an identical project acquired through conventional public
16 procurement.

17 Last, I concur with Professor Flyvbjerg that we don't have unique
18 projects. We do also have the problem that these are a largely one-of projects with
19 different geological characteristics at the very least, and so it's never possible to get full
20 comparison.

21 Similarly, due to the long length of PFI contracts, we've not yet
22 reached the point in time in the U.K. when these DBFO contracts started at the start of
23 the century, have reached the end of their life, so as yet, no judgment can be made over
24 the whole life of the project. In fact, the U.K. National Audit Office, which is the
25 equivalent to the Office of the Auditor General in Canada, has expressed concern that
26 the value-for-money quantitative tool does not answer the key question as to whether
27 the benefits of private finance outweigh its additional costs above government
28 borrowing.

1 So what we can conclude from this, is that if the project looks as
2 though it going to be successful in operational terms, generally it's coming at a very high
3 cost, frequently higher than expected. And in part, the problem is added to by the
4 benchmarking arrangements in contracts around acceptable increases to service costs
5 over the life of the project.

6 This is one reason why when the UK Government implement PF2
7 as the replacement for PFI, it removed some of the soft services from contracts so that
8 things like cleaning and catering costs in hospitals, and some of the soft maintenance
9 on roads, litter removal, managing verges on roads, for example, these were removed
10 from later contracts as creating problems with benchmarking.

11 We can also say that if projects fail, risks and costs are being
12 widely dispersed across both public and private sectors. So that is, even though the
13 business case has shown that value for money should be transferred, this doesn't, of
14 course, happen in practice. The public sector still bears substantial costs. And there
15 are numerous cases in relation to either failed cases or even cases where projects are
16 extremely delayed for various reasons. For example, the liquidation of Carillion as a
17 major contract in the UK means that one of our PFI hospitals has yet to become
18 operational and a further £300M has been spent to get that project to the point where it
19 is today.

20 So I'm really confirming what others have said before more. The
21 evidence available shows that risk transfer is unlikely to be taking place as anticipated;
22 governments pay an extremely high price for risk transfer; and it challenges the notion
23 that risk transfer, as experienced in practice, delivers value for money for the public
24 stakeholder.

25 Moving on to talk about the public stakeholder and public
26 accountability, then, in a bit more detail. So what are the problems? What is it? What
27 are problems? How can we try and improve things?

28 Let's just start by looking at the concept of public accountability,

1 which is obviously that people should be able to hold the government to account so, in a
2 democratic public sector, people should be able to see that expenditure has been made
3 as intended by government. The problem with PFI, and P3s, and so on is that, of
4 course, the project as a whole is straddling the boundary between the public and the
5 private sectors and, therefore, we have a lack of clarity on public accountability because
6 the boundary is not clear for accountability purposes.

7 With DBFO-style projects, we have the situation where very large
8 sums of public money are being spent outside the direct control of the public sector over
9 long periods of time even though the public sector retains responsibility for the
10 stewardship of that money. The public, therefore, want to see that the money is being
11 spent as intended. However, from the private-sector perspective, the private sector, in
12 terms of accountability, is really only concerned with its primary stakeholder, the
13 shareholder, so any concerns over issues of stewardship and decision usefulness relate
14 to shareholders, not the wider public.

15 So this raises the question, is the available accountability provided
16 by financial and non-financial reports from the private partner suitable for public
17 accountability purposes? And the available reporting is necessarily limited because
18 reporting norms -- so this is both in relation to accounting and finance requirements, and
19 legal requirements -- these mean that the focus is on a single entity. And the private-
20 sector side is typically characterized by a really complex network of private sector
21 companies so this can mean, therefore, that we get the norm reporting with some
22 relevant activities.

23 So we've heard about special-purpose vehicles being made up of
24 consortia, made up of different companies. They can be made up in legal forms of
25 distribution of power between the various elements making the joint venture or the
26 alliance-style relationship so that limited reporting needs to take place. It can, therefore,
27 be very difficult to get any public perspective on the finances involved.

28 Generally, profit is not going to be transparent. It's going to be

1 difficult to understand the return to investors. It can be a sensitive area politically as
2 well. We may have front loading of payments; we can, therefore, see reduced up-front
3 profits, but a need for ring fencing to ensure that funds are protected for future
4 maintenance and lifecycle costs. Financiers suggests that they do carry out monitoring
5 of these but, of course, this is not visible to the public stakeholder. So problems,
6 therefore, on whether sufficient information is available from the private partner in the
7 relationship.

8 We can also raise the same question, of course, about whether the
9 public-sector reporting of such projects provides sufficient transparency for public
10 accountability, but this is more complex because, traditionally, public accountability is a
11 much more broad-ranging concept than the sorts of corporate governance mechanisms
12 being sufficient for the private sector. A greater range of stakeholders have various
13 legitimate, but potentially conflicting, expectations.

14 So we have characteristics such as probity and stewardship seen
15 as being very important alongside financial performance and, consequently, we see that
16 public accountability needs to be participatory, consensus-oriented, responsive,
17 equitable, and inclusive, but these are all characteristics which can be quite hard to
18 achieve in complex PPP environment.

19 Both the UK and Canada share a Westminster System of
20 Government so, traditionally, flows of public accountability in such a system are
21 upwards towards government and -- to parliament, sorry, between government and
22 parliament, and downwards towards citizens. But what we see with PFI, with this type
23 of PPP arrangement, is that there's the need for a new horizontal accountability
24 between the public and the private partnership, partners in the partnership. But this can
25 often give rise to conflicts of interest because the private companies of course hold
26 information that is needed for public accountability but which they do not release on the
27 grounds of commercial confidentiality despite the presence of *Access to Information* or
28 *Privacy Acts*. This applies as equally to business cases and contracts before the

1 contract commences as to reports once a project has become operational. And all of
2 this means it is very difficult to get transparent public accountability.

3 Furthermore, reforms in the public sector so that it operates more
4 like the private sector have led to the downplaying of the traditional public accountability
5 concepts in areas such probity and stewardship and, instead, that we see the emphasis
6 was moved to a more managerial style of leadership and performance-management
7 techniques.

8 So overall, in the UK, we see there's been a shift to less
9 transparency in financial reporting and that can, as a result, compromise elements of
10 public accountability, particularly the role of fairness and the role of the public interest,
11 and it becomes extremely difficult to see clearly the total cost of a project to the public
12 purse.

13 The complex structures involved control a lot of public money, but
14 they're not subject to the same public scrutiny and openness as a publicly procured
15 project, and this makes it difficult for the public and public stakeholders to undertake
16 meaning analysis. There are a number of problems here.

17 On the face of it, both external and internal financial reporting
18 should disclose sufficient financial information to assess financial information to assess
19 financial performance, but there's real lack of transparency across financial reporting ,
20 particularly on the public side in relation often to government guarantees on the relative
21 contingencies.

22 This arises because there are complex organization structures and
23 also there's a lot of leeway provided in accounting standards for judgement and choice,
24 so particularly in relation to determining level of aggregation of figures on financial
25 reports, how figures get presented in publicly-available reports and the amount of
26 disclosure relating to the financial statements. All of these mean it's very difficult to
27 monitor what is happening on a particular project over time and to get a sense of the
28 cost, the overall cost to the public purse.

1 It can also be very hard to see how risk distribution and costs are
2 falling on the relevant parties, and for these purposes I would define the relevant parties
3 as being taxpayers, users, although DBFO contracts, as we've heard, they are not
4 paying as much directly. They are running the contracts and of course the financiers
5 who held a lot of power in all these contracts.

6 And the final problem is that the public sector, as I mentioned
7 previously, can be very dependent on the self-monitoring and performance data held by
8 the private sector. And that can create a vulnerability from the public sector side.

9 In terms of how we can improve things, well, obviously I would say
10 we need more transparency in reporting. We need transparency by a range of parties
11 from governments and private sector operators and also from consultants and advisors.
12 Obviously it's going to be difficult to achieve due to commercial confidentiality issues.

13 In relation to financial performance or financial reporting more
14 directly, the need for the provision of sufficient financial information to assess financial
15 performance of projects and to thus safeguard stakeholder interests, needs to be
16 improved. So some of the disclosure issues which remain a matter for judgement, more
17 guidance needs to be given in relation to these areas whilst also considering, of course,
18 commercial confidentiality.

19 Overall, we see a lot of research happening in relation to PFI or
20 PPPs around the world but actually there's very little rigorous financial analysis that
21 takes place in relation to both successful and unsuccessful projects. It tends to be
22 piecemeal. It's quite patchy. We're not building up sufficient of publicly available
23 analysis for the public stakeholders to be aware of.

24 Finally, we need to, as part of this, also consider how we can get a
25 better understanding of how risk transfer is working in practice particularly in relation to
26 the diffusion of risks between the public sector partner, the private sector partner, and
27 the way in which risks are diffused through sub-contracting on the private sector partner
28 side.

1 Some brief conclusions. PFI, PPPs, P3s -- it's all still big business
2 and it's all still gaining in global popularity, despite the U.K. moving away from PFI. So
3 once the U.K. has moved away, the U.K. consultants will be an excellent to exporting
4 their know-how globally. And we need to make sure that we have adequate ways of
5 drawing attention to public accountability issues in relation to this. We need to be better
6 informed and be more aware that the models of value for money and accounting and
7 finance in general used to appraise and report PPPs are not neutral constructs.
8 They've all got certain biases built in.

9 Because these projects as we know are extremely large complex
10 projects, they therefore carry with them this very complex set of accounting and
11 accountability issues. And we still have gaps in the accountability processes and levels
12 of transparency where work is needed to provide further guidance and raise more public
13 awareness about how we can improve our understanding of these issues.

14 Part of the problem here is that care is needed when assessing
15 reporting and comparing projects because it is hard to get robust comparable financial
16 figures.

17 Overall, I would still be arguing we do need to break the
18 transparency of both process and the outcomes because the extent of future financial
19 commitments is both unclear and often, as we've heard, underestimated.

20 Thank you for your attention.

21 **MS. FALGUNI DEBNATH:** Thank you so much, Professor
22 Stafford.

23 Let me now turn to Professor Flyvbjerg to ask a few questions.

24 So Professor Flyvbjerg, you have identified the Madrid Modular
25 Metro as an example of a successful project that has used modularity and speedy
26 iteration with great success. Could you please describe what made that project a
27 success?

28 **DR. BENT FLYVBJERG:** Yes, thank you.

1 So we're talking specifically about two large extensions of the
2 Madrid Metro, some of the largest extensions that have been built outside of China in
3 the world. And the Madrid Metro is a very large metro, especially in relation to the size
4 of Madrid as a city.

5 And in Madrid they succeeded at building these two stages. The
6 first stage had 56 kilometres of rail and 37 stations. And the second stage was 75
7 kilometres with 39 stations. So like I said, substantial additions. And they were
8 delivered at half the time and half the cost as your average subway. So that's really a
9 result that made us sit up as researchers and made, you know, this whole professional
10 area sit up, that this was possible.

11 So it has been studied in detail including by myself but also others
12 and by Madrid itself. And the key things they found was that in Madrid they decided no
13 monuments. So they didn't want to build the monumental Metro but a functional metro.
14 So some cities decide, even that every metro station has to be a monument and they'll
15 hire a different architect for each station and make it unique. Even here in London, you
16 know, that has happened. Moscow is an example of that. And it's not uncommon to
17 say, "Hey, we're going to build a metro. Let's do something special. Let's do something
18 unique," as we talked about earlier.

19 In Madrid they said the exact opposite. We want to have a
20 standard station, same station everywhere, a covered station, large roomy station, lights
21 with easy oversight, easy sightlines. The priority was actually given to the passengers
22 that they could easily orient themselves and find out how to move around the station,
23 with the same principle in all these stations. So that was the first thing.

24 The second thing, no new technology. So no new technology was
25 allowed; only proven technologies. And this is actually the opposite of most, what most
26 people would design. You see a lot of excitement whenever you have the chance to do
27 a large project, whether it's a rail project or any other type of project to innovate and
28 say, "Okay, we're going to be the first building to have this metro," for instance. Or,

1 “We’re going to be the first using this new signal system or whatever.”

2 In Madrid they said, “We’re going to do the opposite. We’re not
3 going to allow anything like that in the metro because it means that we’re going to be
4 first movers, that we’re going to be developing products.” And that’s the most risky
5 thing you can do anywhere. So they made the decision not to do that.

6 Third, they decided to do it in a speedy fashion. Like I already
7 mentioned that it was done in half the time as usual. And this was done by scientifically
8 measuring, you know, boring tunnels. So the metro in Madrid is mainly in tunnel, more
9 than 90 percent in tunnels. And so tunnelling was the key technology and they figured
10 out by measurement what is the ideal length of metro that one machine and one team
11 can deliver? What’s the optimal length of a metro?

12 And then they said, “Okay. Here’s the number of kilometres that
13 we want to build.” And then they just divided the ideal length into there, and they
14 ended up with many more tunnel boring teams and machines than your ordinary city.
15 The normal thing is to have one or two machines if you're doing something like this.
16 They had six machines going at the same time because of this approach, and that’s
17 how they could do it so fast. So they actually worked in parallel instead of in series, and
18 you had all these teams.

19 And then something they hadn’t thought about was that the teams
20 actually started competing against each other. They are very proud people, these
21 people who are running tunnel behind the scenes, and they were comparing notes in
22 the tapas bars at night, in Madrid, you know. They were saying, "How many metres did
23 you do today?"

24 "Well, we did X metres."

25 And then the other team, "Well, we did X minus whatever," you
26 know, and "We got to up our game here or we are going to be the slowest team in
27 town," you know?

28 So you got kind of this Olympics of tunnel boring going on

1 underground in Madrid at this state, which nobody had thought about, actually, but this
2 helped -- this actually helped accelerate the delivery.

3 And the final thing was, there was the decision, no lawsuits. So this
4 is talking about what we talked about earlier, stakeholder management alliancing, as
5 Professor Siemiatycki was talking about, and this was very much an alliance model
6 running the way that we talk about them today, but in the sense that it was very much a
7 collaborative model, where the baseline was, you're not going to sue anybody, but you
8 better behave, you know, because this is a give and take. I mean, if there are
9 problems, we are going to settle them instead of sue all over them.

10 But it means that you're only going to hire people that we really
11 trust, that are really experienced, and so on, which is what they did. And they were
12 actually able to do it with no lawsuits.

13 And the leadership figured that it was better to spend some extra
14 money on settling cases instead of getting into this quicksand that lawsuits are, where
15 you actually don't know how much you are going to spend in the end, and who is going
16 to pay it, and so on. But one thing you do know is that you're going to be delayed and
17 the lawyers are going to make lots of money, but you're probably not going to make lots
18 of money.

19 So that made a lot of sense too. So these are the main things, you
20 know, that they -- no monuments, no new technology, a speedy delivery, accelerated
21 delivery, and no lawsuits.

22 And there's one final thing that I want to mention about the setup,
23 you know? So this was pure governments. This was 100 percent government delivery
24 and government leadership. And I've interviewed Maynar Melis, who's a professor at
25 the Institute of Technology of the University of Technology in Madrid now, and who was
26 the leader of this project. I've interviewed him several times about this, and he
27 emphasized every time that he couldn't have done it if they didn't have a really
28 committed government. So I think this is an additional thing to mention is that you really

1 need a government who is not only committed now, but committed throughout.

2 You will actually find with a lot of government and a lot of
3 leadership, they get very enthusiastic about a project at the outset, but they actually
4 don't have the presence to be focused throughout and follow through and support a
5 project throughout. In Madrid they did, and they did support it throughout, and it was a
6 very strong government, and it was the same government throughout. So they didn't
7 have a change in government. They had the same government who was committed to
8 this as a major project for Madrid, and to make Madrid function better as a city.

9 So I think this is an additional thing, in addition to the first four.

10 The fifth thing is to have a strong and committed government. And
11 we've found that elsewhere in Spain. We've also started projects in Barcelona, we've
12 started projects in Bilbao. Bilbao is world famous for its urban development projects,
13 including a subway, but also the famous Bilbao Museum, which I actually interviewed
14 your countryman, Frank Gehry, about just the day before yesterday. This is in a new
15 paper that we write, so Frank Gehry is Canadian, as you know, but working in Los
16 Angeles. And I found that he has the same characteristic as Manuel Melis in Madrid, is
17 that they really understand that budget and schedule are important, that if you're doing a
18 project, it has to be delivered on budget and schedule, and they know how to do it, and
19 they know how to do it because they are very experienced. And they have these things,
20 like, the elements that I just mentioned from Madrid Metro.

21 Frank Gehry has similar things, and he's also famous, world
22 famous for being able to deliver his extremely difficult projects like the Bilbao Museum,
23 and the Walt Disney Concert Hall in Los Angeles, Bilbao Museum in Spain on time and
24 on budget.

25 **MS. FALGUNI DEBNATH:** Thank you so much. I take it that when
26 you talked about government commitment, that also applies to the UK government, and
27 in setting up the major program management leadership institute?

28 **DR. BENT FLYVBJERG:** Yes. We see, you know, actually a

1 commitment that I wouldn't have expected. Most governments are changing, you know,
2 their policies, like people change fashion. And now, we're on the 10th year of the major
3 projects in the USF Academy, through three different governments who had lots of
4 problems in many areas, as I'm sure you have been able to follow, even from across.
5 And still, they have been totally committed to this major projects USF Academy
6 throughout, simply for the reason that so much money is at stake. And actually, the
7 stability of a national project is at stake. If you don't -- if you're not able to control your
8 major projects, you're not able to control the national project. That's how big a part the
9 national project, major projects are these days, which actually is a major motivation for
10 this in the UK.

11 **MS. FALGUNI DEBNATH:** You've also talked about modularity,
12 but could you just expand a little on what you mean by modularity and its connection to
13 positive learning?

14 **DR. BENT FLYVBJERG:** Yes. So modularity is a way of chopping
15 up a project in smaller parts. I like to use the metaphor "Legos". I am Danish, and Lego
16 is a Danish product, so I like to use that. And anyway, probably everybody now has
17 grown up with Legos and know what they are and how to use them.

18 So actually, what we see in our data is that projects that are -- can
19 be built like Legos with basic building blocks that you just click together, basically, they
20 stay on budget, they stay cheap, and they get cheaper and cheaper through what we
21 call "positive learning", because every time you put these Legos together, you get better
22 at it, and you might realize that you can even enlarge the Legos.

23 So brilliant examples are wind turbines, you know? A wind turbine
24 is really four things. It's a foundation, it's a tower, it's a nacelle -- that's the hitch at the
25 top of the tower -- and then it's like, the wings that are clicked onto the tower. So you
26 have foundation, you click on the tower, you click on the nacelle, you click on the wings,
27 and the turbine is ready to go. You need to hook it up to the grid, of course, but that's
28 all.

1 And this is a modular approach that has been extremely successful,
2 if you look at the numbers. And actually, Manuel Melis in Madrid, he was inspired by a
3 modular approach. He did what everybody thought was impossible. Everybody thinks
4 that urban rail is bespoke, but he actually brought a large element of modularity into the
5 Madrid Metro. If you think about it, the stations are modular. It's the same station used
6 throughout, so it's not like a new station every time. It's the same station throughout.
7 So when you build the first station, you might have some difficulties with that. When
8 you build the second, you learn from the first. You do it a little better, because it's the
9 same station you are building one more time. By the third, you're pretty good at it, and
10 four, five, six, et cetera to station number 76, you are actually very good, and you can
11 deliver it fast and cheap, which is what you want.

12 The same thing with the tunnelling itself. I explained about how
13 Manuel Melis calculated the ideal tunnelling length. There's a module, right? So that's
14 your Lego there. It's like, one boring machine, one team, X kilometre, four kilometres,
15 say. That's the ideal length, and then you just get going with it. And you deliver 6
16 tunnel boring machines, you have 24 kilometres of Metro already, right? And that's
17 modular too.

18 So in this way, modularity was brought into the building of the
19 Madrid Metro, and that's actually the key explanation of why it was cheaper and faster.
20 And that's what modularity does, because you're doing the same thing over and over,
21 you replicate. That's why we call it modular repeatability.

22 And replication makes it possible to learn, and learning is really the
23 key thing here, and it's a thing we often don't talk about, except when we talk about the
24 leadership academy. We actually do talk about learning and education. But actually,
25 learning is key to delivering big projects, and the people who are delivering, deliver
26 them, must have a set up that makes learning positive, as we call it. Positive learning
27 basically means that the costs go down over time and the speed goes up, so it gets
28 easier and easier and cheaper and cheaper to deliver.

1 Negative learning is the opposite. That also exists, and actually,
2 the more you build a thing, the more difficult you find out it is, and the more expensive it
3 gets, and the slower it gets. Nuclear power is an example of that. It has very clear
4 negative learning curves and also, just like the Madrid Metro, it's very well studied, and
5 like wind power, it's very well studied, that over time, it has become more and more
6 expensive and slower and slower to the degree of complete breakdown of delivering
7 nuclear power. It just doesn't work. That's negative learning. And you want to stay
8 away from negative learning like the plague you know, when you're delivering big
9 projects. You don't want to even get close to negative learning and you want to get as
10 close to positive learning as you possibly can and that's through modularity and speed
11 and repeatability.

12 **MS. FALGUNI DEBNATH:** Thank you, I take it that the speed
13 also assists with avoiding black swans; can you explain what "black swans" – what do
14 you mean by that?

15 **DR. BENT FLYVBJERG:** That's actually a very interesting – that's
16 a very interesting finding from our research. So a black swan is a big blowout of some
17 kind. It's an unexpected big negative event basically. And so a big budget blowout
18 would be a black swan in the project. A sink hole that you didn't expect would be a
19 black swan in itself, but also in its impact on the budget, typically.

20 So black swans are extreme events. It's a popular term for
21 something unexpected, you know, like a black swan is unexpected because we all know
22 that swans are white, right? So that's the metaphor, it's a name given to these events
23 by Nassim Taleb who is a professor in New York and we found that the longer it takes
24 to deliver a project, the larger the likelihood is for a black swan, and not just in a linear
25 phase, it's actually accelerated, you know. So you have like an exponential curve and
26 the longer you take exponentially, the more you expose yourself to these black swans,
27 so you really want to deliver things fast in order to avoid yourself to exposure to really
28 big cost blow-outs and really big delays and really big benefit shortfalls.

1 **MS. FALGUNI DEBNATH:** Thank you. Professor, Flyvbjerg, you
2 are known for many aphorisms. Let me put some to you and explain what you mean by
3 these.

4 The first, “understand your odds”.

5 **DR. BENT FLYVBJERG:** Yes, so the odds are, you know, your
6 risks, like what’s your risk of budget over-run, what’s your risk of delay if you do
7 something. So I was talking about that for urban rail earlier. The odds of having a cost
8 over-run, what is it? The odds of being delayed; what is it? You need to know that for
9 your specific projects and we also call them “base rates”. You need to know what the
10 base rates are, what the odds are for what you’re doing, otherwise you would be as
11 clueless as the person going to a casino and playing a game without knowing what the
12 odds are of the game.

13 Now if you play a game without knowing what the odds are from the
14 game, you’re very unlikely to win that game. Well, that’s exactly what is happening in
15 big project delivery. People are optimistic about the odds or they don’t know the odds.
16 They might think they know the odds but as you heard, for everything we’ve talked
17 about today, there’s optimism about PFI, there’s optimism about – even the alliance
18 model there’s optimism about – right now there’s been optimism about 3P – I talk about
19 optimism for the budgets and so on. So it means as soon as you’re optimistic, you don’t
20 know what your odds are; you think you do, but there’s actually a diluted perception of
21 what your odds are. So that’s what that means.

22 **MS. FALGUNI DEBNATH:** Thank you. The next one, “Plan slow,
23 act fast”.

24 **DR. BENT FLYVBJERG:** Yes. Planning is cheap. Planning is
25 something you do on computers, on charts and you simulate things, you design things.
26 If it’s physical, you might build models and so on. It’s all cheap. Action is expensive.
27 Once you put those tunnels going in the ground the big bucks start flowing, you know.
28 It’s a completely different story, and therefore, you want to prepare rigorously and slowly

1 thinking things through – you know, Daniel Kahneman, the famous psychologist who
2 wrote the book “Thinking Fast and Slow” and who won the Nobel Prize in Economics
3 and is the godparent of behavioural science basically.

4 He emphasizes “thinking slow”; that’s what his whole book
5 “Thinking Fast and Slow” is about. Fast thinking is a bad thing. We come up with bad
6 results if we think fast. So, therefore, planning is the thinking in a project-wise, so we
7 need to plan slowly and get it right by thinking slowly.

8 But then once we get going, we’ve got to go real fast because of
9 what we talked about before, you actually have exponentially larger risk the longer you
10 take once you start delivering things. So its’ okay to be slow in the planning phase; it’s
11 not okay to be slow in the delivery phase.

12 Now, unfortunately, on the majority of big projects the exact
13 opposite is happening. People can’t get started fast enough, get the shovels in the
14 ground fast enough, you know, like “Let’s get going here” and they jump to conclusions
15 regarding the technology. They just decide, you know, if we’re going to do something –
16 let’s do a bridge, you know, and they don’t analyze all the alternatives, or whatever the
17 relevant thing is. They would very quickly decide on a technology and not study
18 alternatives. So big projects are notorious for a lack of study alternatives, which is
19 actually fast thinking. You avoid all those alternatives when you think fast.

20 If you haven’t thought things through, then when you start, when
21 you put the shovels in the ground and you start doing the project, a lot of unpleasant
22 and surprising things are going to happen and it’s going to slow you down, so you’re
23 going to have real slow delivery by all the delays that we see in our data, right? That’s
24 how those delays happen, is by projects that weren’t prepared well, so they weren’t
25 planned slowly. They were planned quickly. And then you get the slow delivery and
26 you can’t avoid it because you hadn’t thought things through. So unfortunately, the
27 most projects are planned quick and act slow and deliver slow. That’s what happens.
28 And you want to do the opposite; you want to plan slow and deliver fast.

1 **MS. FALGUNI DEBNATH:** Thank you. The next one, “Last of the
2 unknown unknowns”.

3 **DR. BENT FLYVBJERG:** So a lot of people think that you can’t do
4 anything about the unknown and the knowns. That’s just – it sounds very reasonable,
5 because if they’re unknown, how can you – if you can’t know about them, how can you
6 do anything about them? But we’ve actually invented this forecasting method that we
7 talked about earlier called “Reference Cast, Forecasting” and actually based on ideas
8 by Daniel Kahneman. Just like an off-hand idea – he has a 1979 paper and it laid
9 dormant there for decades. And then I picked it up and discussed it with Kahneman
10 and on that basis we developed this method where you try to forecast projects on the
11 basis of a reference class of projects that have already been delivered. That’s why it’s
12 called “Reference Class – Forecasting”. The forecast is based on this reference class
13 of actual data, of actual projects that have already been delivered. And I’m sure you
14 can see if you use the data from projects that have already been delivered, then
15 everything that happened to those projects are included in those data. When you look
16 at the performance, if that performance were low because of unknown unknowns, the
17 effect of the unknown unknowns are going to be in there. So when you use those data
18 to forecast a project that you’re planning, you actually have taken unknown unknowns
19 into account to the extent that the way previous similar projects were affected by
20 unknown unknowns is now built into your forecast for the project that you are planning.

21 So that’s how we are taking unknown unknowns into account and
22 this has been evaluated now and studied by other people, so you don’t have to believe
23 me, there are independent studies of this now that actually document that because the
24 unknown unknowns are taken into account, reference class forecasting is the most
25 equitable forecasting method out there. It beats any other forecasting method on the
26 market because of executors.

27 **MS. FALGUNI DEBNATH:** Thank you. And the final one, “Know
28 that your biggest risk is you”.

1 **DR. BENT FLYVBJERG:** Yeah, that's related to what we talked
2 about earlier, about causes and root causes that the problem is actually not the scope
3 changes in themselves or even the cost over-run in itself, the problem is our estimates
4 of costs, our estimates of scope change, geology and archeology and so on, so it's
5 really related to how we perceive of things and how we estimate things. And to the
6 extent that we had the biases we've talked about, that's the real risk, you know. Our
7 biases is the risk. And we can see in the data there, a much larger proportion of the
8 error and bias that are in the forecast, is actually from us misjudging what is that we are
9 judging. It's false estimates; it's biased and false estimates from us, more than it's
10 anything else. So that's how we are our own biggest risk. So our biases, cognitive and
11 political, is the real risk in project management; it's not – risk is not out there, it's actually
12 in here. This is our biggest risk, is right here between our ears.

13 **MS. FALGUNI DEBNATH:** Thank you so much, Professor
14 Flyvbjerg. Let me now turn to Professor Stafford and ask you a few questions.

15 Professor Stafford, Her Majesty's Treasury in the U.K. produces a
16 book that consists of much guidance of assessing various projects, including P3s called
17 the "Green Book". Can you tell us what that is?

18 **DR. ANNE STAFFORD:** Yeah, so the green book has been
19 around for quite a long time now. It's been extensively reviewed and updated over that
20 time period. The purpose of the green book is to give guidance on appraisal of policies,
21 programs and projects, and also to more recently it has started to give a lot more
22 guidance on the monitoring and evaluation. However, monitoring and evaluation.
23 However, a huge amount of the Green Book does deal with the guidance given for
24 appraisals. So when a policy, or a project, or a program is being considered, it lays
25 down in considerable detail what government officials should be doing in terms of
26 carrying out that appraisal to see if government advice to parliament is that project,
27 policy, or program should then be implemented.

28 It has been subject to criticism, in particular, criticism for over

1 relying on cost-benefit analysis and therefore under-considering some of the more
2 qualitative aspects that need to be taken into account when undertaking project
3 appraisal in particular.

4 **MS. FALGUNI DEBNATH:** The Green Book sets out quite a bit of
5 information on how to evaluate P3s. What are some of the factors that need to be
6 considered?

7 **DR. ANNE STAFFORD:** So this isn't something that I've -- when
8 we were looking at our evaluations, this isn't something that the Green Book was doing
9 at the time. It has come in since some of the work that we had that we did. Some of
10 the areas that are considered, just -- if we find the right piece of paper -- here we are.

11 So some of the issues to consider, well, is the public sector able to
12 define and measure objectives and output in an appropriate way? How -- I mean these
13 are topics that we've covered in our discussion. So how is risk going to be allocated?
14 How is risk going to be managed by the private sector? What operational flexibility is
15 going to be built into the PPP? What levels of accountability are going to be there to
16 make sure that the project is adequately delivered and assessed?

17 Is there scope for innovation by the private sector? That obviously
18 was one of the objectives I mentioned as part of creating value for money. But this ties
19 back to a lot of Professor Flyvbjerg comments in relation to project uniqueness, for
20 example, should we not just be looking at a replication on some of these issues.

21 Things like contract duration, things like the residual value of the
22 contract, what incentives and monitoring are going to be available? And finally, and
23 obviously very important when looking at PPP options, what is the role of the market in
24 all of this? So is the private sector capable of getting the finance package together and
25 delivering the required outcome on the project?

26 **MS. FALGUNI DEBNATH:** Thank you.

27 **DR. ANNE STAFFORD:** M'hm.

28 **MS. FALGUNI DEBNATH:** How does the Green Book suggest

1 that one addresses optimism bias? How can we account for that?

2 **DR. ANNE STAFFORD:** Again, I think probably this something
3 that Professor Flyvbjerg can comment on more so than myself. The Green Book does
4 give -- just talking about this briefly about this, the Green Book does give some
5 indications of how optimism bias can be addressed by suggesting that some
6 discounting is put in, that some adjustments are made in relation to the figures to take
7 about of optimism bias. I would regard this -- this again is quite subjective to do in
8 practice because the module is a quantitative module and, therefore, to pull back on
9 optimism bias, there is guidance given in the Green Book as to how you -- how
10 adjustments can be made to the financial model to reduce the of optimism bias, but I
11 can't actually comment on how successful the guidance given in the Green Book
12 actually is in practice.

13 **MS. FALGUNI DEBNATH:** Thank you.

14 Professor Flyvbjerg, would you like to comment on that? You're on
15 mute.

16 **DR. BENT FLYVBJERG:** Sorry about that. For full disclosure, I
17 was involved in developing the first Green Book and later revisions of the Green Book,
18 specifically regarding optimism bias. And so the Green Book is doing basically
19 Reference Class Forecasting. That's the first time that this was institutionalized with a
20 government. Now several governments has it, including the Danish Government, but
21 the UK was first. And so, basically, there are what they call "optimism bias uplifts" that
22 you apply to estimates that have been done in the conventional way.

23 So we know that the estimates that have been done in the
24 conventional way are optimistic for the reasons that we talked about earlier. We can
25 measure the degree of that optimism by studying historical projects, you know, how
26 optimistic they were, and then we use that degree of optimism as an uplift to the
27 estimates, whether the estimates are, you know, budgets in monetary terms or it's
28 demands. For instance, if it were an urban rail line, it could be the passengers and you

1 would use an uplift or a down-lift, you know, as it would be relevant to those numbers
2 based on historical data. And Professor Stafford is absolutely correct that this is a
3 subjective exercise and you have to be very careful that you don't go straight back into
4 cognitive biases when you're doing this, and that takes some discipline but I believe
5 with that discipline it can be done, and it is being done.

6 And like I said earlier, there are now studies that are comparing
7 projects that have been subjected to this process, including the process in the Green
8 Book, and that documents that such projects come out with a higher accuracy of their
9 forecast than projects that don't apply this methodology. But it's not a bulletproof way of
10 doing things by any means, and I think the real trap is re-introduce cognitive bias and
11 not stick with the historical numbers but think, "Hey, but we are actually going to be
12 better than this," you know, and then you adjust the numbers. And there is scope in the
13 Green Book for adjusting the numbers. You can adjust up or down. If you think you're
14 going to be better than the historical projects, then you can adjust for that. If you think
15 that you have a worse situation, that your project is more difficult than the historical
16 average, then you can adjust for that, you know. And that's where, through the
17 backdoor, bias can enter again.

18 **MS. FALGUNI DEBNATH:** Thank you.

19 And Matti, Professor Siemiatycki, the Canadian Government
20 doesn't have an equivalent of a Green Book. Could you address assessment in the
21 Canadian context?

22 **DR. MATTI SIEMIATYCKI:** Yeah, thank you. The Canadian
23 context is somewhat different than the UK. Planning and project delivery is typically a
24 provincial jurisdiction and so it's carried out at the provinces and then, in some cases, it
25 becomes the responsibility of the municipalities or their agencies.

26 And in Canada, we have a much more ad hoc process of carrying
27 out assessments. Some jurisdictions do very rigorous assessments and have
28 templates and guidance and others are doing -- others are leaving it to individual

1 departments or organizations to carry out their own project assessments. Here in
2 Toronto, for example, Metrolinx, which is the regional transportation agency, they've
3 gone to great lengths to carry -- to create guidance on how to assess projects on a
4 whole host of accounts, from financial accounts to social accounts and environmental
5 considerations.

6 In Canada, the bigger issue is actually how we use those
7 assessments and whether they're actually being used to guide and drive decision-
8 making. When you go back and look at whether the projects that receive the highest
9 scores are actually the ones that get selected for project delivery, it's a very mixed
10 record. In some cases, we go with the evidence, as flawed as it may be, and choose
11 the projects that, on paper, show the highest cost benefit. And in other cases, we
12 proceed with projects that, if you were to go and look at the assessments, actually have
13 very poor scores in terms of their return on investment, there are subsidies that are
14 going to be required, and other implications of the projects that are delivered. So it's
15 quite different.

16 And the funding is not necessarily tied to the ranking of the
17 projects. Our funding models tend to, again, be quite ad hoc in terms of which projects
18 get selected, so there's a lot of latitude for picking and choosing projects in our system.
19 And in that sense, it varies, perhaps, a little bit from a more structured and centralized
20 process that they have in the UK.

21 **MS. FALGUNI DEBNATH:** Thank you. To stay with you,
22 Professor Siemiatycki, one of the key factors in defining a P3 is the length of that
23 contract or that relationship. You have discussed the importance of collaboration in that
24 regard. What -- in your view, what are the elements of effective collaboration?

25 **DR. MATTI SIEMIATYCKI:** So when we hear the word
26 "partnership" all of a sudden it really evokes this idea of a group of people or two people
27 holding hands and working in collaboration together to drive a shared outcome. And as
28 I mentioned in my presentation, a lot of -- the public private partnership as it's currently

1 being practised -- we use the word “partnership” but in many ways it’s actually
2 public/private contract. It is a different form of contract. It is intended to align interests
3 and create mutual goals. But in essence it’s still very contractually based and when
4 problems arise, even when there are dispute resolution mechanisms in the contracts,
5 these projects, especially recently, are finding their ways into our court systems.

6 But collaboration then has a much deeper meaning. If we really
7 want to talk about genuine collaboration, we’re talking about mutual goals. We’re
8 talking about trust. We’re talking about open collaboration or open information sharing
9 and communication, and really creating venues that share information, and then work
10 towards mutual solutions. And we’re talking about leadership.

11 Leadership is really important and Professor Flyvbjerg talked about
12 the experience in Madrid and can pick out the individual who set the tone at the top for
13 that collaboration. And in many projects that are successful, you can actually figure out
14 and reflect on who that individual is and what the characteristics of that person are that
15 led them to be successful. And in many cases it’s not person that’s driving the project
16 forward with an iron fist. It’s really someone who understands the position that each of
17 the other parties around the table are in, and tries to find collaborative solutions that
18 don’t disadvantage their own organization but makes the project go, rather than just
19 furthers their own individual position.

20 Now, interestingly, in the Alliance model in British Columbia, for
21 example, they talk a lot about the role of not just evaluating costs in the upfront
22 procurement but also actually evaluating the individuals who are involved and trying to
23 understand their collaborative history and how they and their organizations have
24 behaved in past projects to really understand and take a behavioural approach as much
25 as looking at the specifics of the contracts and the details of the proposal. It’s really
26 understanding the collaborative nature.

27 And one last point is that everyone loves to use the word
28 “collaboration” and we all want to be in collaborative relationships. The question is,

1 what happens when things really go wrong? And they will on these big projects. These
2 projects will invariably run into troubles that you may not have been able to foresee the
3 exact instance but you know that something is going to come up. And the question is,
4 how do those relationships withstand those events, those risk events, that can be really
5 costly and that can really create both financial risk and also political risk for all of the
6 parties involved.

7 That's how we know when a collaboration is really working, and
8 that's what we need to learn more about as we're starting to think through bringing true
9 collaboration into contracting in all its forms, whether it's traditional contracting, whether
10 it's public/private partnerships or increasingly an understanding on an alliance
11 contracting too.

12 **MS. FALGUNI DEBNATH:** Thank you so much.

13 Let me open up generally to all the panelists. Does anybody have
14 any comments that they would like to make, any observations on their fellow panelists'
15 discussion? Let me open up the floor.

16 Professor Stafford?

17 **DR. ANNE STAFFORD:** I think I would really just like to follow on
18 from the points that have just been made in relation to collaboration and the use of
19 alliances. And I think this is indeed the way forward. I don't have as much experience
20 as my fellow panelists in looking at mega projects but certainly this is something that I
21 have very much seen in comparative research that I've undertaken in the U.K. looking at
22 schools and healthcare projects where it's been really obvious that it's the organization
23 of the partnership and how the private and the public partners are working together that
24 enables project success.

25 My experience is on much smaller projects but certainly it's
26 important to have everybody on the same page working together. And if there is over-
27 focus on the financial returns from the project to the exception of other parts of delivery
28 of the projects by one partner or one of the partners, say, in a consortium, that's when

1 problems arise that make the whole project go really badly because we don't get this
2 idea of partnership happening and people working together.

3 I think another point to make is that continuity in partnerships is
4 actually very important. If we look at the rate of turnover of managers or other people
5 involved at the top of projects or managing significant parts of the project, if we have
6 significant turnover of people, again it's very difficult to maintain the momentum and the
7 relationships that have been built up over time.

8 And we tend to sort of think, don't we, when we're studying these
9 things we forget the human element because -- I mean, I'm looking at it from an
10 accounting and finance perspective. If we forget the human element, that's when things
11 start to go wrong. And we have got to remember that we've had some examples given
12 to us that people invest a lot of time in the personal relationships involved in these sorts
13 of networks and partnerships. And we ignore those at our peril. And these do have
14 financial value at the end of the day in making sure that outcomes turn out as expected
15 and in order to deliver the relevant financial returns to the relevant stakeholders.

16 **MS. FALGUNI DEBNATH:** Thank you so much, Professor
17 Stafford.

18 Mr. Commissioner, that concludes this panel's deliberations.

19 **COMMISSIONER HOURIGAN:** All right. I want to thank all the
20 panelists for participating today. Your insight is invaluable to us and our work. So thank
21 you for making the time. We do appreciate it.

22 Thank you.

23 --- Upon adjourning at 12:23 p.m.

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