

**4TH INTERNATIONAL CONFERENCE
FOR SUSTAINABLE MOBILITY
& IRF ANNUAL CONFERENCE**
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iRAP methodology as KPI for road concessions A Brazil case

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Externalities of road transport create a market failure where the price of the service does not reflect its true cost and where there are no incentives for those who would benefit from improved road safety to fund solutions, thus creating a financing shortfall



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Who Pays



Where is the source of failure and who has the solutions



The Road User
 Speed, Alcohol, Distraction, Fatigue, Helmets, Seat Belts



The Vehicle
 World car fleet will double in next 10-20 years. Zero-star cars are still being sold

SOLUTIONS FOR ROAD SAFETY

The Road
 > 40% of roads are only 1 or 2-star standard. High return-on-investment solutions exist





global charity - global standard - local leadership



100+ countries



3,000,000+ km



us\$96bn+ investment made safer



The 2030 SDG Targets



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HALVE ROAD DEATHS
& SERIOUS INJURIES
BY 2030

TARGET **3**
2030

Target 3: By 2030, all new roads achieve technical standards for all road users that take into account road safety, or meet a three star rating or better.

TARGET **4**
2030

Target 4: By 2030, more than 75% of travel on existing roads is on roads that meet technical standards for all road users that take into account road safety.

Brazil road concessions



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First highway concession in 1994.

Boom in the 2000s.

New concessions decade

**Opportunities to
technological innovations**

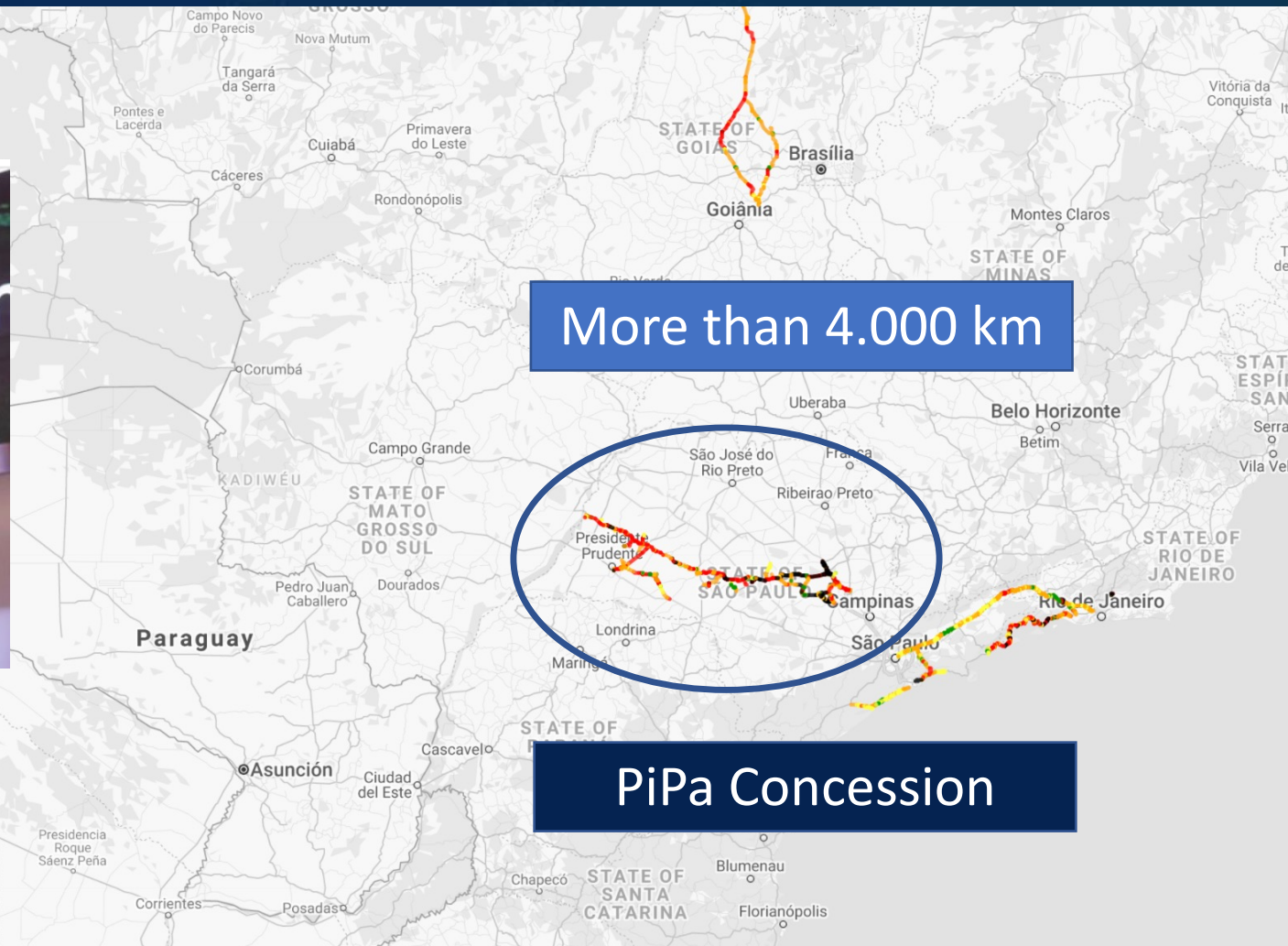
Brazil new concessions using iRAP Road safety KPIs



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Brazil road concessions



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PiPa Concession

- Piracicaba Panorama – year 2020
- Largest concession in Brazil
- 1,273 kms integrating 62 cities of Sao Paulo State
- CAPEX BRL 14 billion / EUR 2,7 billion
- 30 years
- 1st incorporating iRAP metrics in the contract

Piracicaba-Panorama (“PiPa”) highlights

AUTHORITY



ADVISORS



TECHNICAL



INVESTORS



CONCESSIONAIRE



- ARTESP monitors progress – toll collections only permitted after first performance milestone has been met
- Advisory team support for financing, design of bonus scheme, star rating targets + independent monitoring and reporting

3-star or better targets

User	Y0	Y10	Y30
Vehicle	77%	96%	...
Pedestrian	64%	77%	...
Motorcyclists	61%	75%	...
Bicyclists	67%	82%	...

Bonus Tiers

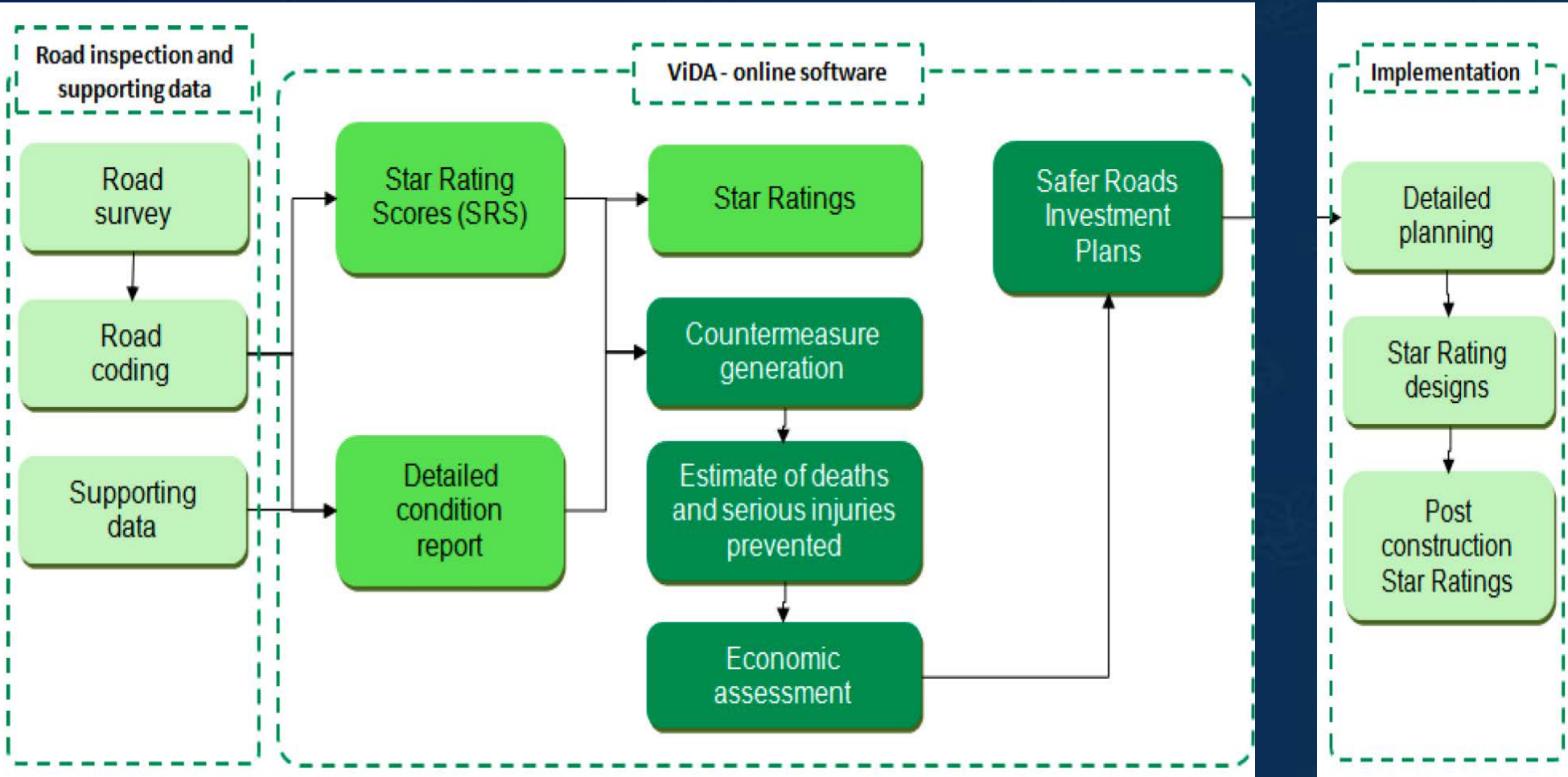
Achieved	Bonus
110%-120%	0.5% of contribution
121%-130%	1.0% of contribution
131%-140%	1.7% of contribution
140%+	2.7% of contribution

Concessionaires in Sao Paulo are required to contribute a % of toll revenues to the Sao Paulo monetary fund. If performance exceeds targets, they receive a % payback of that contribution.

Pavesys / IFC / iRAP



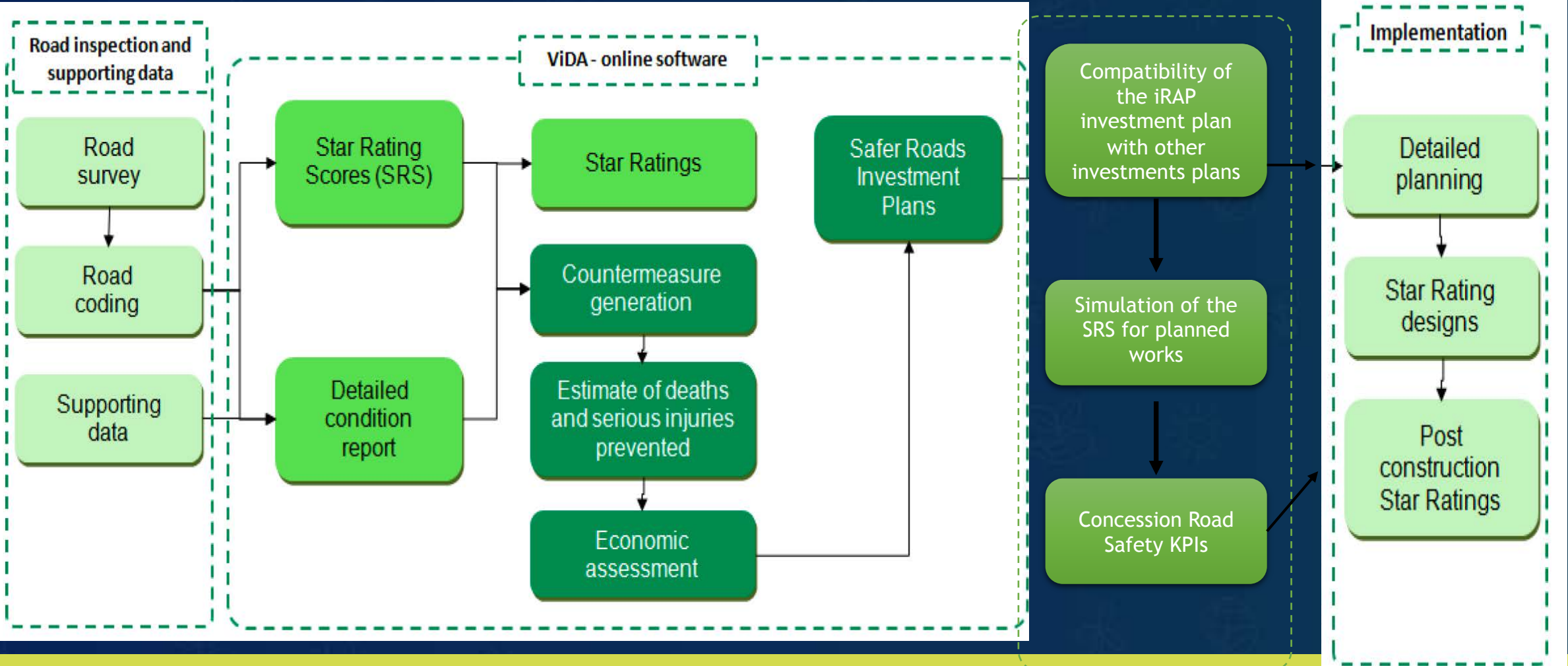
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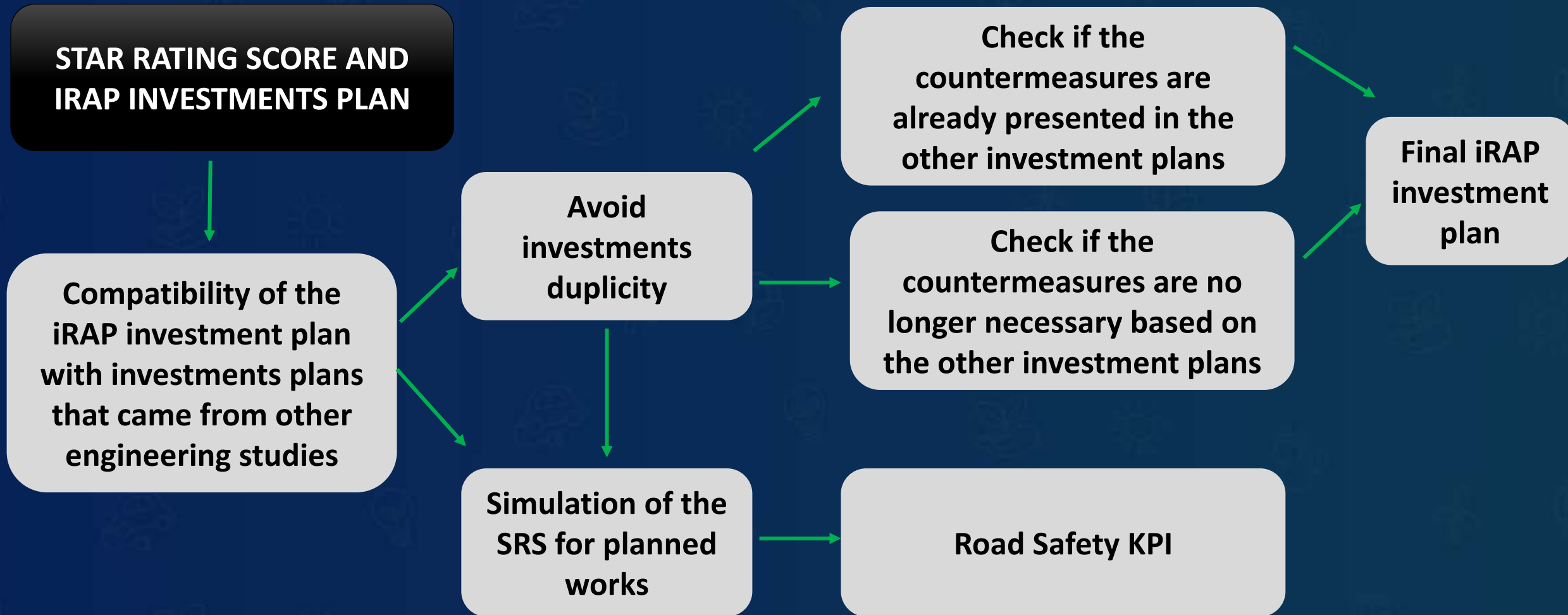
Pavesys / IFC / iRAP

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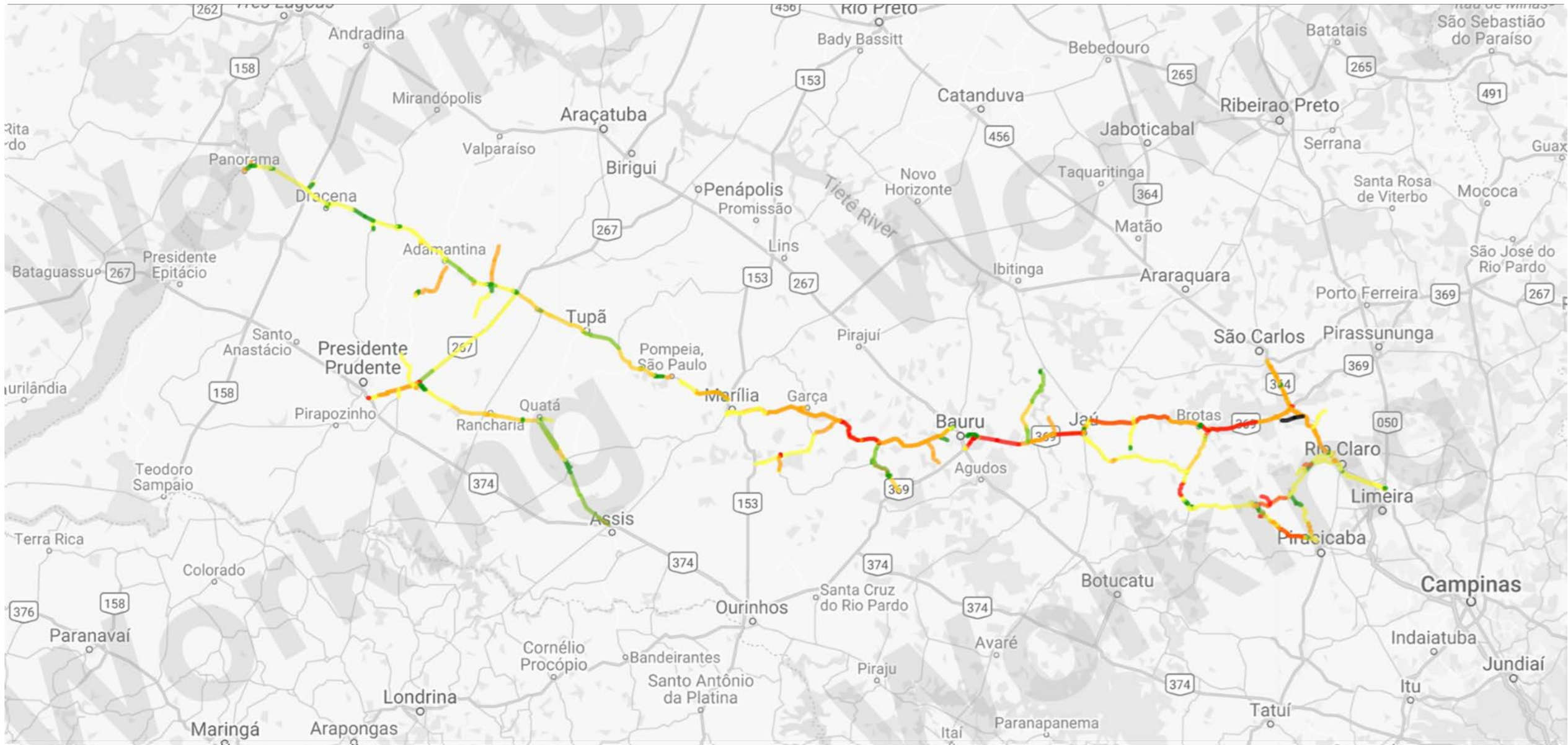
Extra steps for Brazil
new concessions



Pavesys / IFC / iRAP

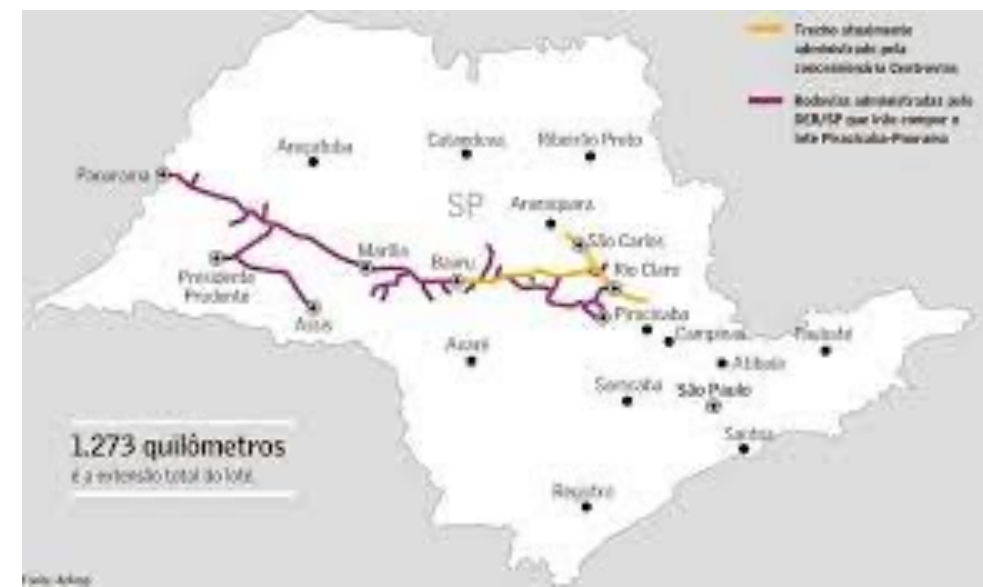


PiPa Concession



PiPa Concession

Sections	YEAR 0	YEAR 2	YEAR 6	YEAR 10	YEAR 14	YEAR 18	YEAR 22	YEAR 26	YEAR 30
191-1	3	3	3	3	3	3	3	4	4
191-2	3	3	4	4	4	4	4	5	5
191-3	3	3	3	3	3	3	3	4	4
191-4	2	2	3	3	2	2	2	2	3
191-5	2	3	3	3	3	3	3	2	4
197-1	3	3	3	3	3	2	2	2	2
197-2	3	3	3	3	3	3	3	3	3
197-3	4	4	4	4	4	4	4	4	4
197-4	4	4	4	4	4	4	3	3	3
225-1	2	2	3	3	3	2	2	2	2
225-2	1	1	3	3	3	3	3	3	3
225-3	2	2	3	3	3	3	3	3	3
225-4	3	3	4	4	4	4	3	3	3
225-5	2	2	3	3	3	3	2	2	2
225-6	2	2	3	3	3	2	2	2	2
225-7	2	2	3	3	3	3	3	3	3
225-8	3	3	3	3	3	3	3	3	3
225-9	2	2	3	3	3	3	3	3	2
225-10	3	3	3	3	3	3	3	3	3
225-11	2	2	3	3	3	3	2	2	2
225-12	2	2	3	3	3	3	3	3	3
225-13	2	2	3	3	3	3	3	3	3
225-14	2	2	3	3	3	3	3	3	3
225-15	2	2	3	3	3	3	2	2	2
225-16	1	1	2	2	2	2	2	2	2
225-17	2	2	3	3	3	3	2	2	2
261-1	4	4	4	4	4	4	4	4	4
261-2	3	3	3	3	3	3	3	3	3
261-3	5	5	5	5	5	4	4	4	4
261-4	4	4	4	4	4	4	4	4	4
284-1	3	3	4	4	3	3	3	3	2



User group	YEAR 0	YEAR 2	YEAR 6	YEAR 10	YEAR 14	YEAR 18	YEAR 22	YEAR 26	YEAR 30
Vehicle Occupant	77%	78%	96%	96%	96%	94%	90%	90%	88%
Motorcyclists	61%	60%	75%	75%	69%	73%	72%	73%	64%
Pedestrians	64%	63%	77%	77%	78%	76%	76%	76%	76%
Bicyclist	67%	66%	82%	82%	80%	74%	71%	71%	68%

NOTES:

- Star rating by Road Length
- Smoothing by Section

Bonus / Not charge

The concessionaire has the opportunity to improve their ranking.

Reward by a monetary bonus.

From 110% to 140% of increase.



0.5% to 2.75% of the Toll charge fund

A CONCESSIONÁRIA, por sua conta e risco, poderá implementar programa de majoração da classificação por estrelas de segurança rodoviária, de acordo com metodologia do programa internacional de avaliações de rodovias (IRap) ou metodologia similar reconhecida e aprovada pela ARTESP. O INDICADOR de segurança viária a ser utilizado para o cálculo de bônus está disposto no APÊNDICE C e, caso atendido pela CONCESSIONÁRIA, será bonificado nas REVISÕES ORDINÁRIAS conforme tabelas abaixo, que indicam a superação da meta para cada tipo de USUÁRIO (pedestre, ciclista, motocicleta e veículo) e o respectivo bônus:

Veículos Resultado do INDICADOR em relação à ficha de Indicador 10.1 do APÊNDICE	Bônus (não cumulativo)
110% - 120%	0,5% do saldo acumulado na Conta do Saldo Tarifário a favor do PODER CONCEDENTE
121%-130%	1% do saldo acumulado na Conta do Saldo Tarifário a favor do PODER CONCEDENTE
131%-140%	1,75% do saldo acumulado na Conta do Saldo Tarifário a favor do PODER CONCEDENTE
Maior que 140% ou sempre que o INDICADOR de segurança viária atingir 95% de trechos com mais de 3 estrelas	2,75% do saldo acumulado na Conta do Saldo Tarifário a favor do PODER CONCEDENTE



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THANK YOU!

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