Sustainable Water Integrated Management (SWIM)

Expert Facility Activity No EFS-LB-2

Procurement of PPP in the Water/Wastewater Sector

Day 2 – Session 2.2:
Performance-based Operator & Management Contracts

by
Jan G. Janssens
jangjanssens2009@gmail.com

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1. PBC Fundamentals

Why a Performance-based Contract?

Why Performance-based Contracting ?

- Technical assistance projects anchored within rigid, bureaucratic institutional framework, have low impact on efficiency of service delivery
- Required is a paradigm change, concentrating on a bottom- up/ demand-side oriented approach instead of a top-down, supply-side driven one,

  - ***performance based and output oriented.***

What Differentiates PBCs from Traditional Contracts ?

- **Increased value for money** – Performance risk lies with the contractor and full remuneration is contingent upon verifiable performance improvements

- **Greater flexibility for the contractor** – Decides on measures to undertake to achieve targets, applying innovation and creative solutions

- **Increased emphasis on accountability** – The contractor's remuneration is tied to verifiable progress vis-à-vis its targets

- **Support to long-term improvements** – Efficiency gains through a PBC can help support long-term improvements

PBCs in context of the decentralization process

- Performance based contracting is also a valuable tool for municipalities in their efforts to contractualize or to improve the contractual relationship with their (public or private) water utility

- **in view of more efficient and effective performances against criteria and benchmarks.**

Contributing to the enabling environment, but …

- Performance based contracting can create a positive dynamic for reform

- **… but should certainly NOT be considered as a substitute for carrying out the institutional reforms necessary to promote the sustainability of the sector.**

Results-based Financing (RBF)

- Results Based Financing (RBF) is an umbrella term linking payment to achieving a predetermined performance target.

- RBFs have become common practice in highways and roads, healthcare and energy sectors, and now also in the water sector.

- In the water and sanitation sector, the most common application is through Output Based Aid (OBA), often and mainly targeted at increasing access to the urban poor

2. PBC Challenges

Performance Based Contracts: *challenges*

- A validated base-line information is a precondition for an **effective incentive structure with realistic time-bound performance targets** – *inaccuracy of base-line data is an issue and a constraint*

- Making **gains of efficiency** ***sustainable through a balanced PPP***

improving performance – building capacity
& hybrid financing schemes

Preparing for PBCs

A PBC contract should be:

- Fair to both parties
- Balanced risk-allocation between parties
- Clear payment structure
- Flexibility: allowance for contract variation; amendments

Clarity of Contract

PBC are complex. Poorly drafted clauses can generate undue conflicts between the parties:

- Lawyers must work closely with sector experts

Special care shall be taken to :

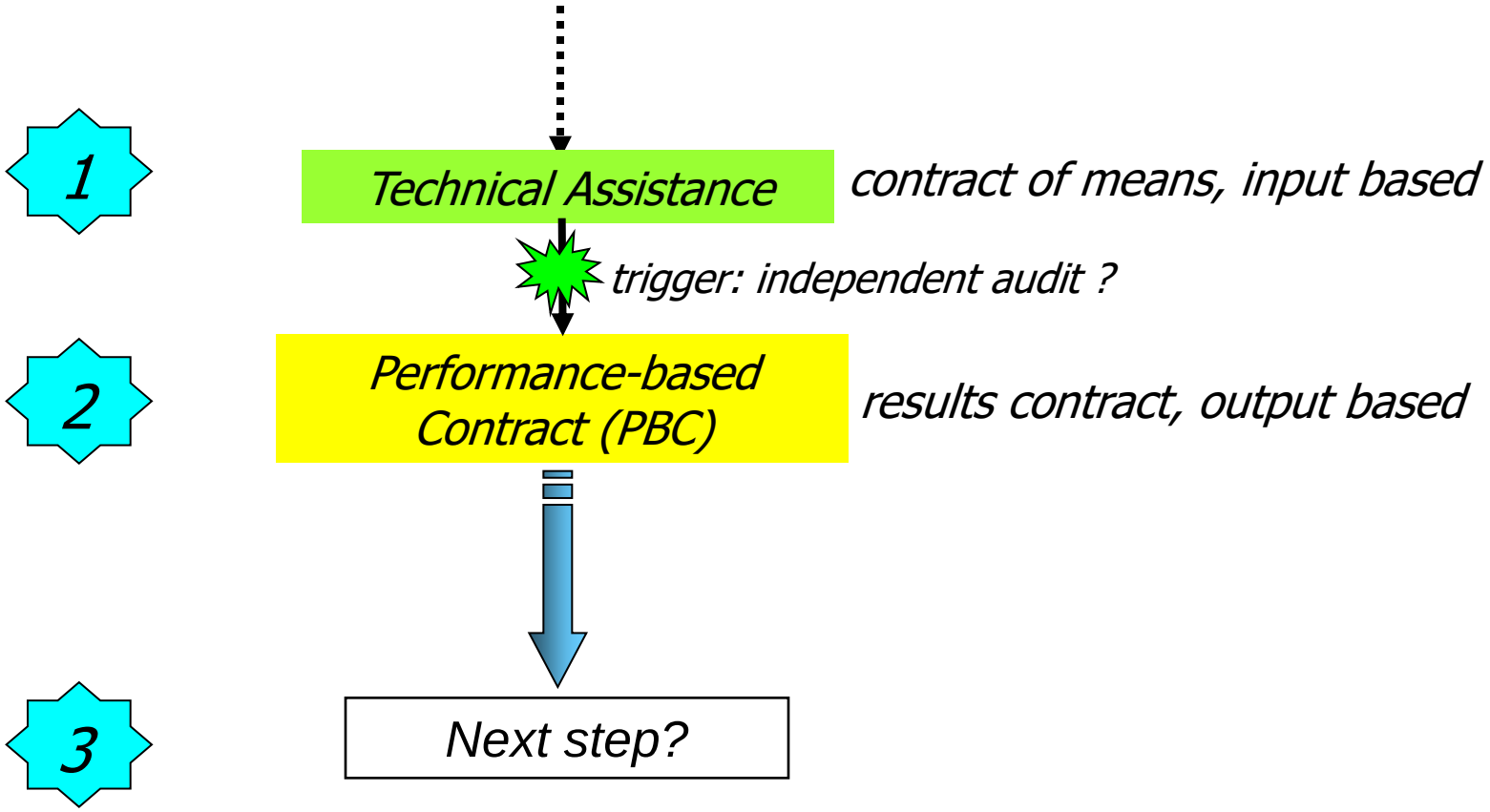
- Clearly define expected inputs tied to the fixed payment
- Choose simple and objective meaningful indicators
- Quantify the targets (be realistic)
- Spell out how the bonus formula shall be calculated
- Spell out the responsibilities of the contracting utility

A Stepwise Approach ?

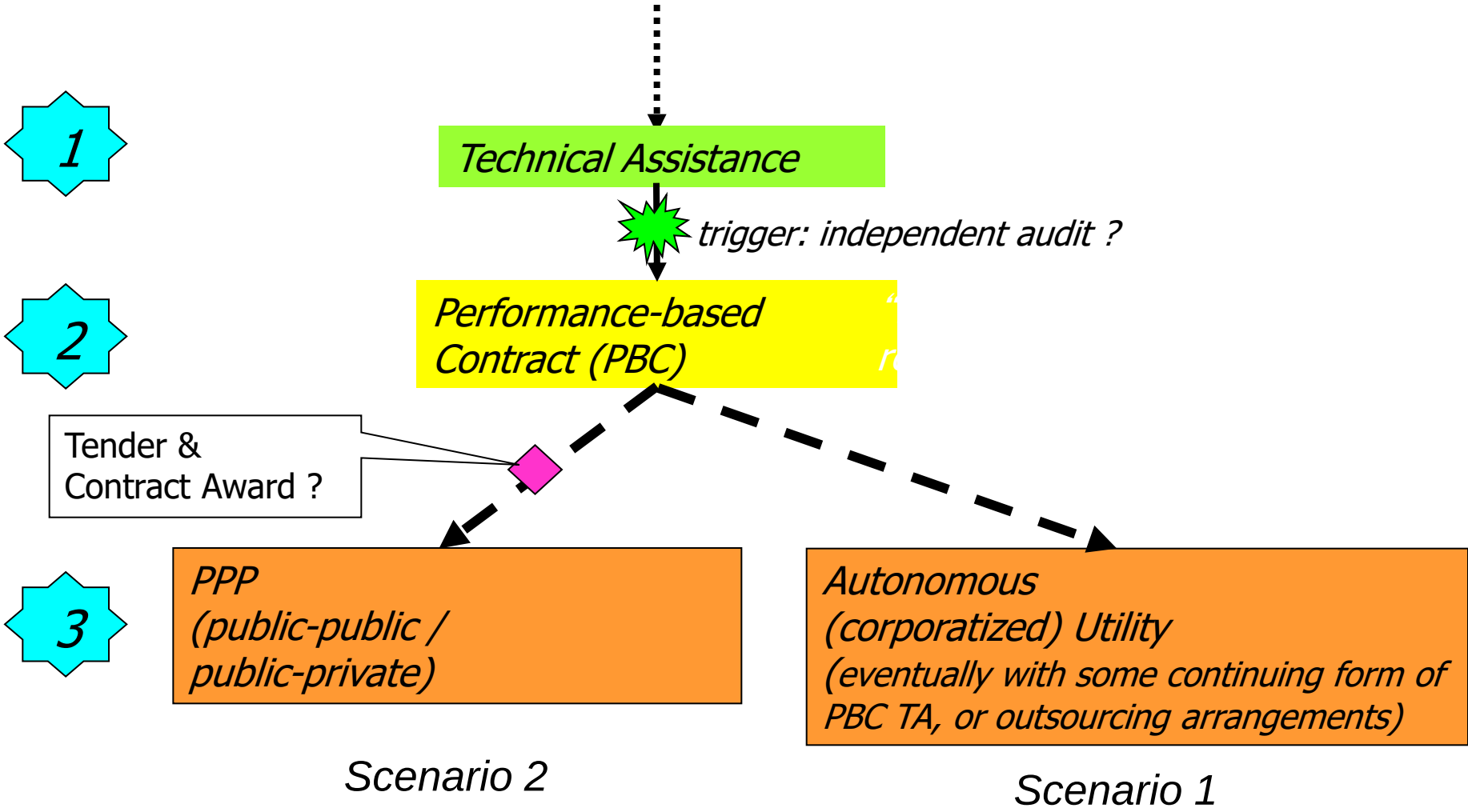
- An intermediate PPP step may be needed while institutional, operational efficiency, and/or financial viability problems are tackled, to
  - Raise tariffs,
  - Build Government commitment and regulatory capacity,
  - Gain better information about the system

- **But a stepwise approach:**
  - May never go beyond the first step …
  - May involve complex re-bidding issues

A Proposed Sequential Engagement



A Proposed Sequential Engagement



3. Incentive Structures

Fixed vs. Variable Remuneration

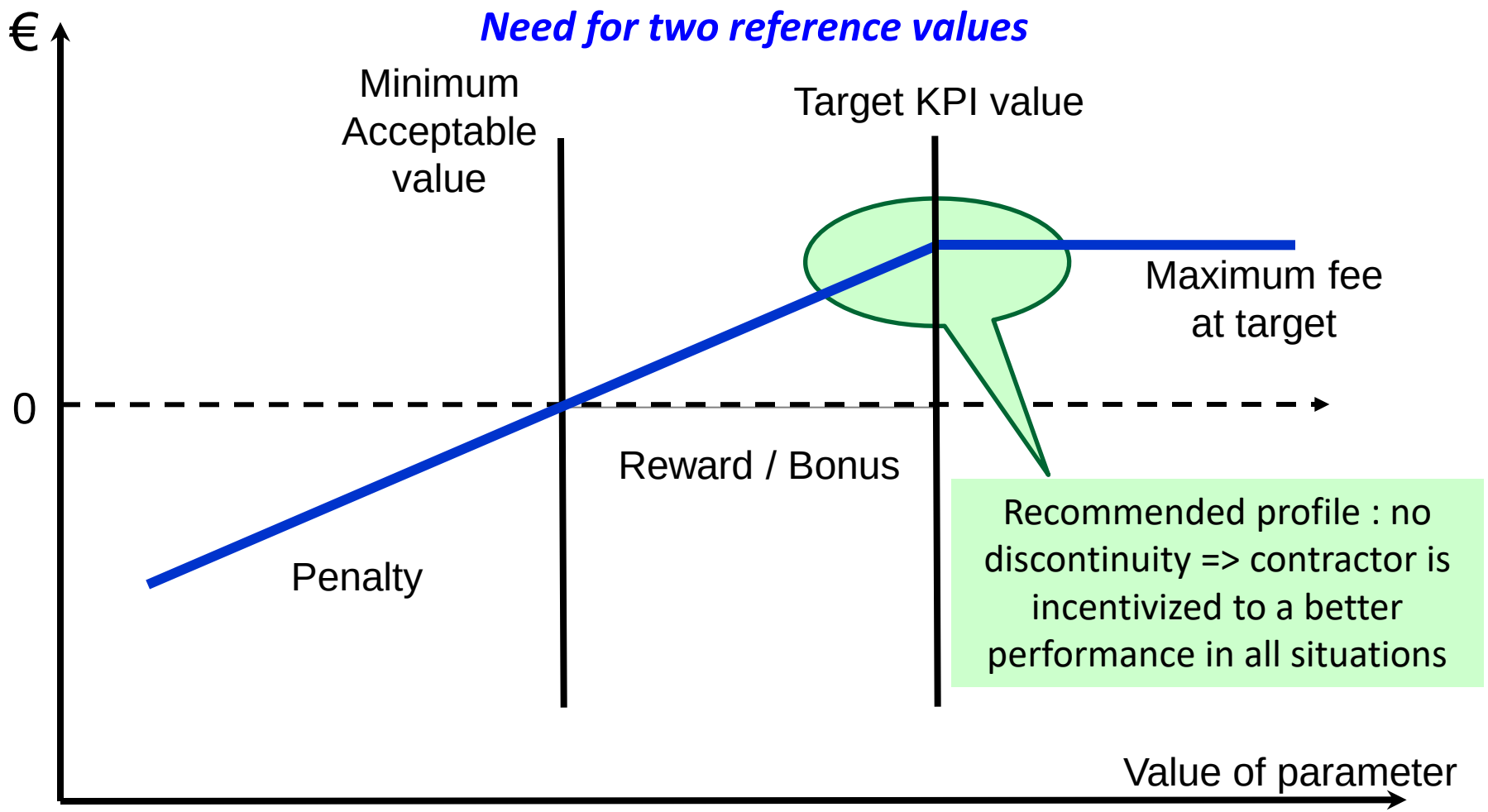
Most **PBCs are hybrid schemes, combining fixed payment with variable payments**

✓While a 5-10% bonus provides some incentives for performance, a “true” PBC shall aim for **at least 20 or 30%** of the remuneration paid through variable fees – so as to include not just profit but also part of contractor’s costs.

✓The feasibility of having at least 20% paid through bonus depends on local conditions and contractual design:

- Allocation of risks must be carefully thought about
- Contractual enhancements to mitigate risks (e.g. donors support with partial risk guarantee (PRG))

Performance based incentive structure – *most recent*



Source: Naldeo (2010)

Designing the contract and incentives framework: "….the devil is in the detail…."

Achieving efficient incentives is dependent on many factors including:

- Striking a proper balance between fixed and variable payment
- How the contractual targets are determined
- Which NRW indicators are used
- Level of flexibility left to the contractor

There is **no blueprint**: well designed PBCs are heavily **customized** contractual PPP instruments

4. PPPs and PBC

Major Fields today For PBCs In Water PPPs

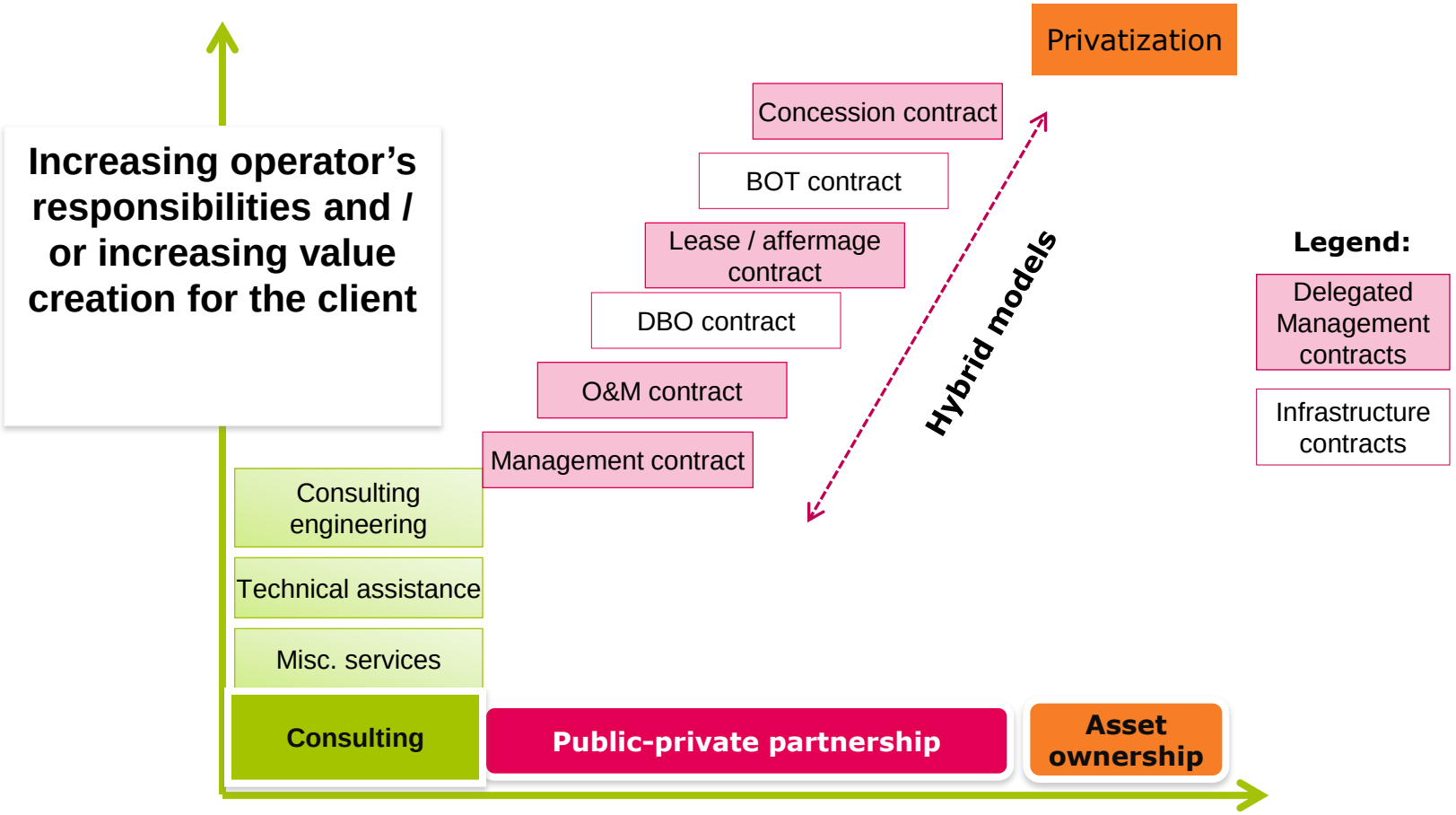
- NRW: becoming a mature matter
- Operations Contracts / Delegated Management Contracts
- Focused Service Contracts

- Note that PBCs are widely used in some other sectors

  - Already in 1980 the US Office of Federal Procurement established that it is the policy of the Federal Government that agencies use performance-based contracting methods to the maximum extent practicable when acquiring services.

  - PBC contracts have been since long widely used for energy efficiency projects

PBCs can apply for a wide variety of services and contracts



Source: Suez (2014)

Operator’s & Management Contracts

Conventional Operation / Management Contracts

- Performance based operation and/or management contracts are emerging as a major driver to boost the performance of water utilities.
- However, such contracts have often triggered critics such as :

  - **Rapid increase in the tariff of water in many cases** combined with high (excessive) profits by the operators

  - **Perceived loss of control by the water authorities** over the service, partly due to lack of information

  - **Asset management** : a grey zone in the contracts resulting sometimes in poor or uncertain performance

  - **Insufficient reversibility** : at the end of the contract, there is a dependence to contractor in place; in case of will to establish a new contract, conditions for a true competition, are not satisfied, making it legally impossible to launch a tender.

Operation / Management PBCs : Main Features

This opened the way (in France) to a second generation of affermage contracts.

These new types of Performance-based (operation/management) contracts typically include 6 key features

1. **Performance based revenue mechanisms**
2. **Open book obligations**
3. **Mechanisms to share profit above a given amount (capped profits)**
4. **Creation by the operator of a dedicated company to manage the contract**
5. **End of contract clauses to ensure mutability**
6. **Quantified asset management obligations**

PBCs for Smart Metering Roll-out

- ✓Initially smart meter was driven by the wish to bill the exact volume of water consumed, and avoid human meter reading
- ✓However smart metering has now also be assigned a second target : make possible an accurate water consumption pattern evaluation by the customer – up to a (daily) period of time
- ✓Such requirements are now compulsory for electricity and gas consumption, by EU regulations.
- ✓This objective requires a (very) high reliability of the whole metering system
- ✓Performance based contracts are thus well adapted for such roll-out contracting.

PBCs for Procurement

- ✓Procurement accounts typically 50 % of the direct expenses of a water service. Major items are civil works, renewal of equipment, electricity, chemicals and IT.

- ✓In addition, buying the right material or service is essential to support day to day operation as well as ensuring sustainability.

- ✓Some water services have thus decided to outsource procurement to have it managed by specialists.

- ✓The most known of such policy is the decision by Thames Water in the early 2000 to outsource its strategic procurement, with the target to improve efficiencies and generate savings in both capital (CAPEX) and operational expenditure (OPEX).

5. PBC for Energy Efficiency

PBCs for Energy Efficiency

✓Most countries have implemented Energy Savings Performance Contracts (ESPCs) or more simply Energy Performance Contracts (EPC), in order to accelerate investment in cost effective energy conservation measures without the need of up-front capital.

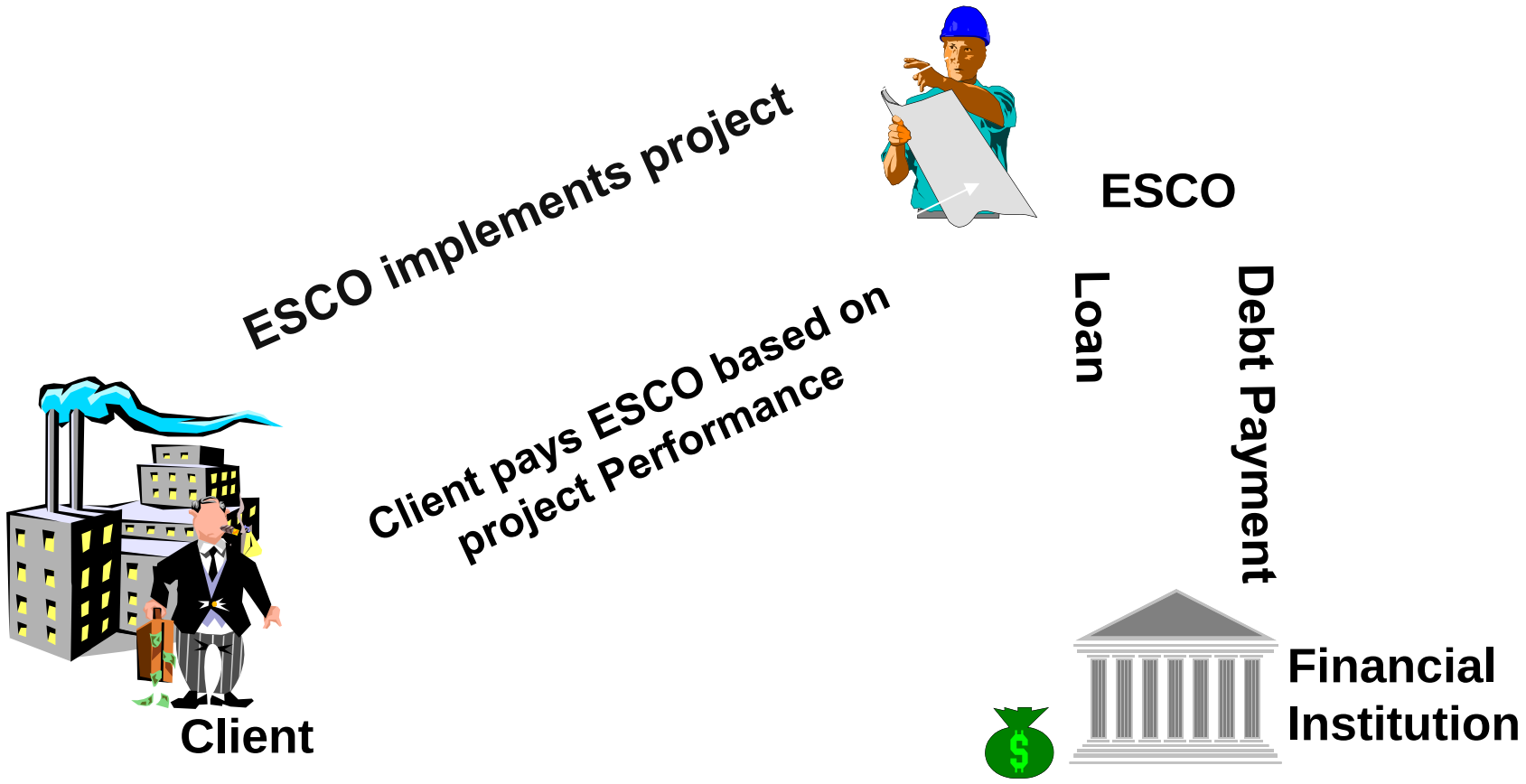
✓Such contracts are typically signed between the requester and an **Energy Service (**or **Savings) Company** (ESCO). The ESCO conducts a comprehensive energy audit and identifies improvements to save energy. The ESCO designs then and constructs a project that meets the requester's needs and arranges the necessary financing. The energy cost savings are used to pay for the project over the term of the contract which can vary between 5 and 20 years.

PBCS for Energy Efficiency – Typical kPIs

- kPIs of performance based energy conservation contracts can include the following:
  - Global energy consumption reduction. Can be computed per m3 produced, m3 sold or m3 treated
  - Global energy cost reduction. Can be computed per m3 produced, m3 sold or m3 treated
  - Use of a minimum quantity of locally produced renewable energy
  - Pay back time given an investment input

ESCO – Client Relationship

Performance Based Contract



Energy Performance Contracting (EnPC)

- ✓ Projects are implemented by experienced private engineering or construction companies (ESCOs), which are specialized in designing, engineering and implementing energy saving investments.
- ✓ The ESCO is paid for its investments and its services from achieved savings in energy expenditures, which are a result of these investments.
- ✓ The EnPC provides a guarantee to the public body that contracted savings in energy and related current budget expenditures will be realized and foresees compensation by the ESCO in case it does not meet its contractual obligation

6. PBC and AM/NRW

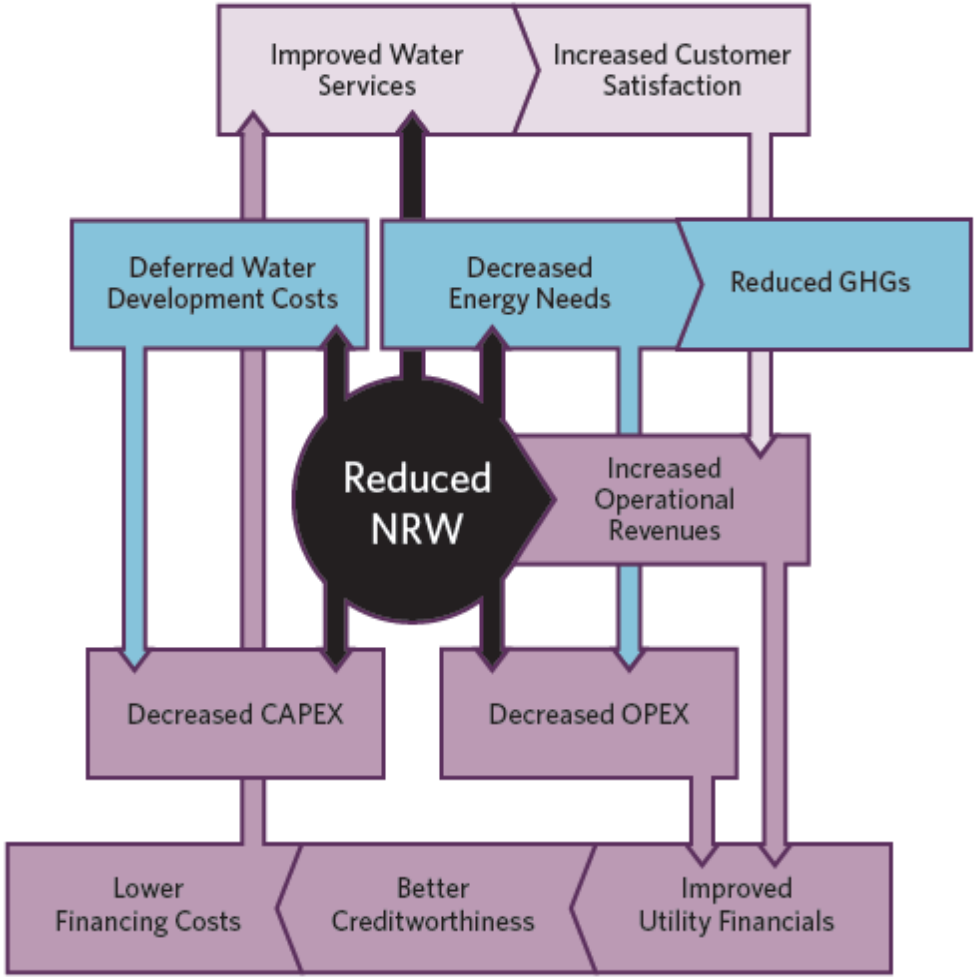
Non-Revenue Water

- There exists to-day a high awareness about NRW among utilities, governments and financial institutions

- The importance of NRW is now recognized, but in its relation with operation efficiency and asset management.

- However the way forward how to tackle NRW remains often unclear, and experiences in the last years show sometimes mixed results

Inter-related Benefits of NRW Management



NRW directly improves various parameters (black arrows). At the same time, there is an ongoing cycle where these parameters contribute to the improvement of other parameters.

Source: WB PPIAF 2016

Why Manage NRW – The Impact on Creditworthiness ...

1. **Improve Revenue – A direct positive impact on creditworthiness**
   - NRW represents the lost opportunity for revenue equivalent to sale of water at current tariff

2. **Reduce Expenditure – A direct positive impact on creditworthiness**

NRW can also be interpreted in terms of expenditure incurred for production of that much water, wasted (which directly points to the monetary value of NRW). Some of the components of expense associated are:

- Energy consumption to produce the unsold volume
- Water treatment, chemical, and pumping costs to produce unsold volume
- Capital expenditure required to compensate for inefficient utilisation of existing capacities, and
- Capital expenditure required to provide more service (since water saved can substitute for increased water production using new plant/equipment).

Cost benefit assessment

The decision to implement an NRW reduction program must be based on a detailed cost-analysis based on the actual situation of the water utility.

The Challenge of Reducing NRW in Developing Countries – WB/PPIAF Water Supply Paper No 8

Main pre-requisites for contemplating a PBC in NRW

1. Availability of **reliable baseline data**, or baselining done at onset of contract

2. Possibility of **ring fencing** the private partner's activities – Accountability for results

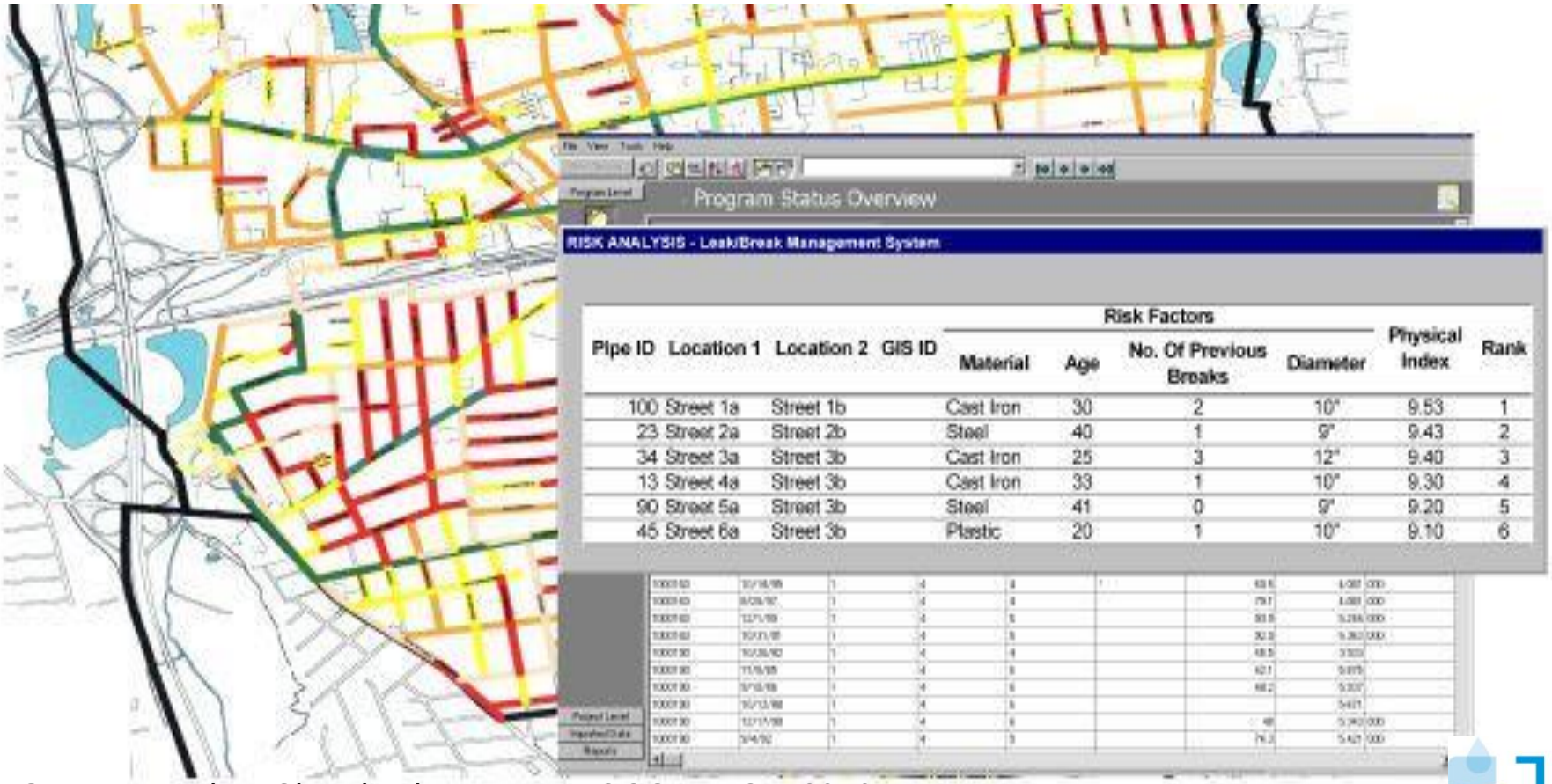
3. Do **potential benefits outweigh the costs**?

4. Do **public procurement rules** allow for PBC? – Bonus payment, flexibility to decide activities

5. Understanding the **NRW dynamics** (water balance) – Very challenging in case of intermittent supply

Pipeline and Asset Management

- High quality materials / Proper installation
- High standard of maintenance
- Pipeline replacement using a **decision support system**



Pipe ID	Location 1	Location 2	GIS ID	Risk Factors: Material	Age	No. Of Previous Breaks	Diameter	Physical Index	Rank
100	Street 1a	Street 1b		Cast Iron	30	2	10"	9.53	1
23	Street 2a	Street 2b		Steel	40	1	9"	9.43	2
34	Street 3a	Street 3b		Cast Iron	25	3	12"	9.40	3
13	Street 4a	Street 3b		Cast Iron	33	1	10"	9.30	4
90	Street 5a	Street 3b		Steel	41	0	9"	9.20	5
45	Street 6a	Street 3b		Plastic	20	1	10"	9.10	6

Source: Bambos Charalambous, HYDROCONTROL, 2016

JJC Advisory Services

The Inverse Approach can be led under Two Schemes

The Financial Resources Driven Approach

A given amount of money (financial resources) is available, and one has to find the best action plan to have the **maximum reduction of NRW**

OR

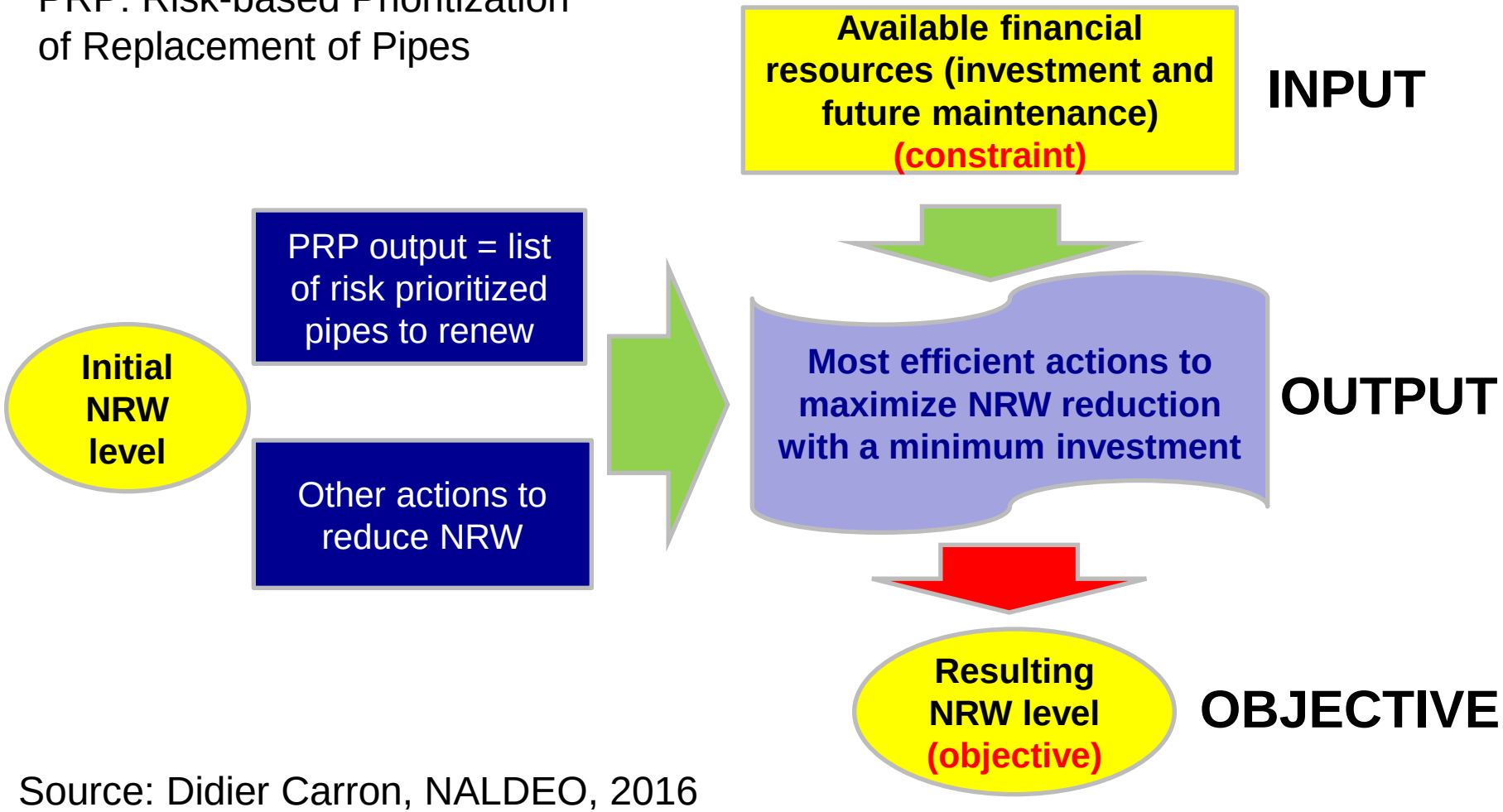
The NRW Reduction Target Driven Approach

A given NRW reduction is targeted (f.i. from a financial model providing expectations in revenue by the reduction of NRW); One has to find the **less expensive action plan** to achieve this NRW reduction

Source: Didier Carron, NALDEO, 2016

the inverse approach – available financial resources driven option

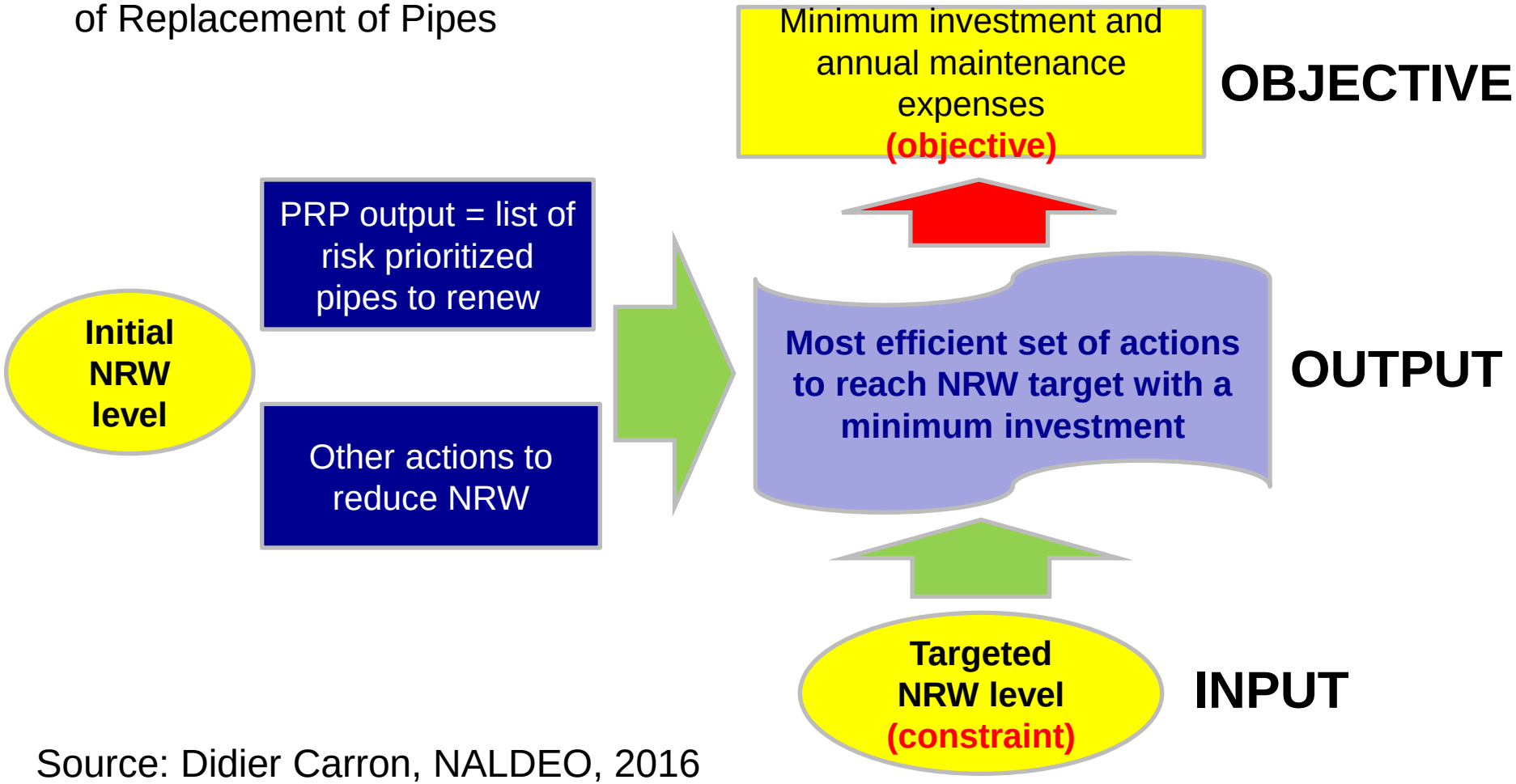
PRP: Risk-based Prioritization of Replacement of Pipes



Source: Didier Carron, NALDEO, 2016

the inverse approach – NRW reduction driven option

PRP: Risk-based Prioritization of Replacement of Pipes



Source: Didier Carron, NALDEO, 2016

Some Typical Approaches to a NRW PBC Design

1. Bundling everything together in one package

   - Advantages: Strong incentives and single point responsibility
   - Disadvantages: Maximum risk transferred to contractor

2. Have one package for planning and overseeing NRW reduction strategy and one package for the construction work

   - Advantages: Reduces risks to the NRW contractor and ensures best value for each component (design vs. implementation)
   - Disadvantages: More complex to manage, diffuse responsibilities

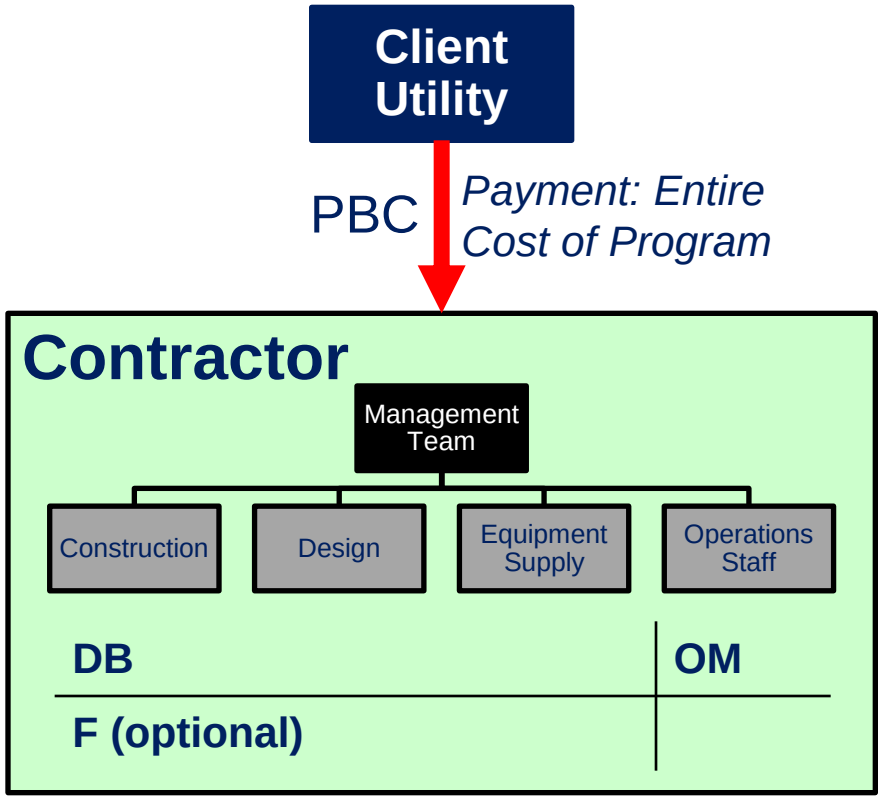
3. Have one package with the NRW contractor which also acts as construction manager to hire and supervise works contractors

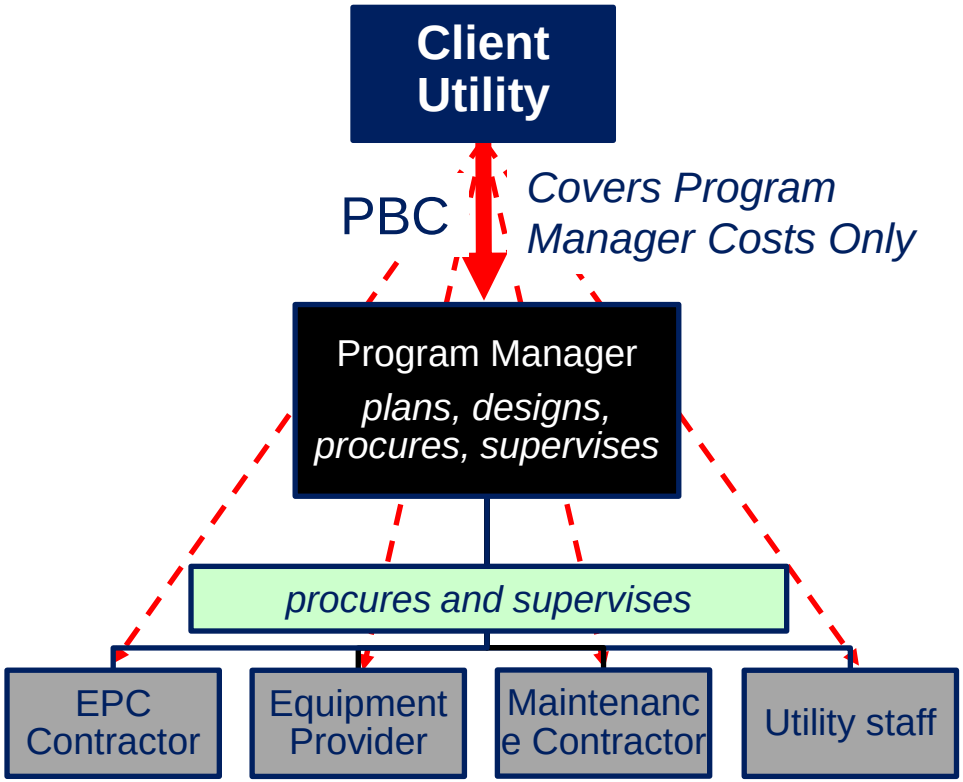
   - Advantages: Single point responsibility, NRW contractor risks are reduced compared to the bundled model (1)

   - Disadvantages: How to reward NRW contractor for “intermediate” level of risk transfer

All-Inclusive Contract or, Program Manager Contract?

Source: World Bank / Castalia, 2016





Advantages

- Single point of accountability
- Maximizes contractor control after contract signed
- Facilitates private finance

Advantages

- More flexible and adaptable
- Lower risk for all concerns
- Incentive fee is relative to the 'brains' cost, not the entire program

Legal contract and payment for services non-PBC

Targets are Important

- Setting targets are important to **achieving minimum performance**.
- Most contracts include **minimum annual targets** indicating their perceived usefulness.
- When NRW projects are intended to reduce both **physical and commercial losses**, it makes sense to have **targets for both**, plus an **overall target**; but to allow the contractor some **flexibility in achieving the overall goal**..

Highlights from field experiences

- Essential starting point is to **understand what drives losses**
- Definition of **appropriate contract objectives**
- Demonstration that **third party (private sector) partnership** can be an effective way of overcoming technical and financial constraints and achieve loss reduction objectives
- A well-structured performance based contract **incentivizes** the private party **to achieve targets** but allows **flexibility in implementation strategy**
- Training of the utility to **maintain the results** or allow private party a maintenance period (Stage 2) with appropriate incentives that may differ from the early management period (Stage 1)

The Way Forward

- Designing “smart” networks for efficient operation:
  - ✓ Smart by design, incremental and adaptive design (to have networks that minimize leaks)
  - ✓ Smart by control (leak indicators built into new networks)
  - ✓ Smart by use of water − incorporating all resource streams in an integrated urban system

- Achieving optimized NRW conditions in networks: the system should inform on faults in a way that creates a speedy response, in more aggressively sensored -, and more small clustered networks.

- Contextualizing NRW within an integrated urban water management (IUWM) framework results in NRW being viewed as a potential water source, encouraging water utilities to consider a NRW management strategy as part of a wider portfolio of urban water resource management.

Step 1 : Establish a Baseline

- This work should be done by a consultant with good experience in NRW
- **Establishing at first a reliable water balance is absolutely necessary**
- This includes typically :
  - assessing the (in)accuracy of production and distribution meters
  - leading **detailed field** investigation to evaluate intermittent supply and reasons, quality of works (pipes, connections), first assessment of illegal connections, etc.
  - identifying processes for meter reading and reporting of consumption index
  - evaluating the customer relation management system

Step 2 : Draft a Strategy for NRW Reduction, fully embedded In the overall Utility Asset Management Strategy

- Three major issues
  - **Intermittent supply**
  - **Commercial losses**
  - **Physical losses**
- **Not only the technical issues should be addressed in a NRW reduction strategy : financial issues, social issues, internal organization issues should also be tackled together**
- Long term benefits of NRW should be included in the assessments
- Example : illegal connections can be well addressed by proposing very low fee for connections during works of leak detection campaigns.

Step 3 : If appropriate, prepare a PBC to reduce NRW

- Contracting with a private contractor for a Performance Based Contract (PBC) should only be done after completion of steps 1 and 2.
- Otherwise the contract might not address the right issues and the contractor might face a different situation than stated in the contract.
- It should be ensured that the utility is fully committed to make a success of the PBC and is truly supporting all changes resulting from the implementation of a NRW reduction strategy and the work with a private partner
- **Key point is to decide duties and level of empowerment of the private contractor**

Contract Duration

- Utilities like short contracts
- But achieving (often ambitious) NRW reduction targets takes years
- Very roughly, 3 % reduction/year, with a maximum of 5 %/year, can be considered as reasonable **after quick wins have been picked**
- This can lead to contracts with several years for implementation … 5, 6, 7 years make sense for contract duration: Cf. Bahamas, Algiers
- Keep in mind that for many contracts, first years are difficult :

  - The many changes create resistance

  - Procurement processes are often not fully in place

  - Poor gains can be initially obtained : for example, repairing leaks results in more pressure, creating new leaks (Cf. Manila experience)

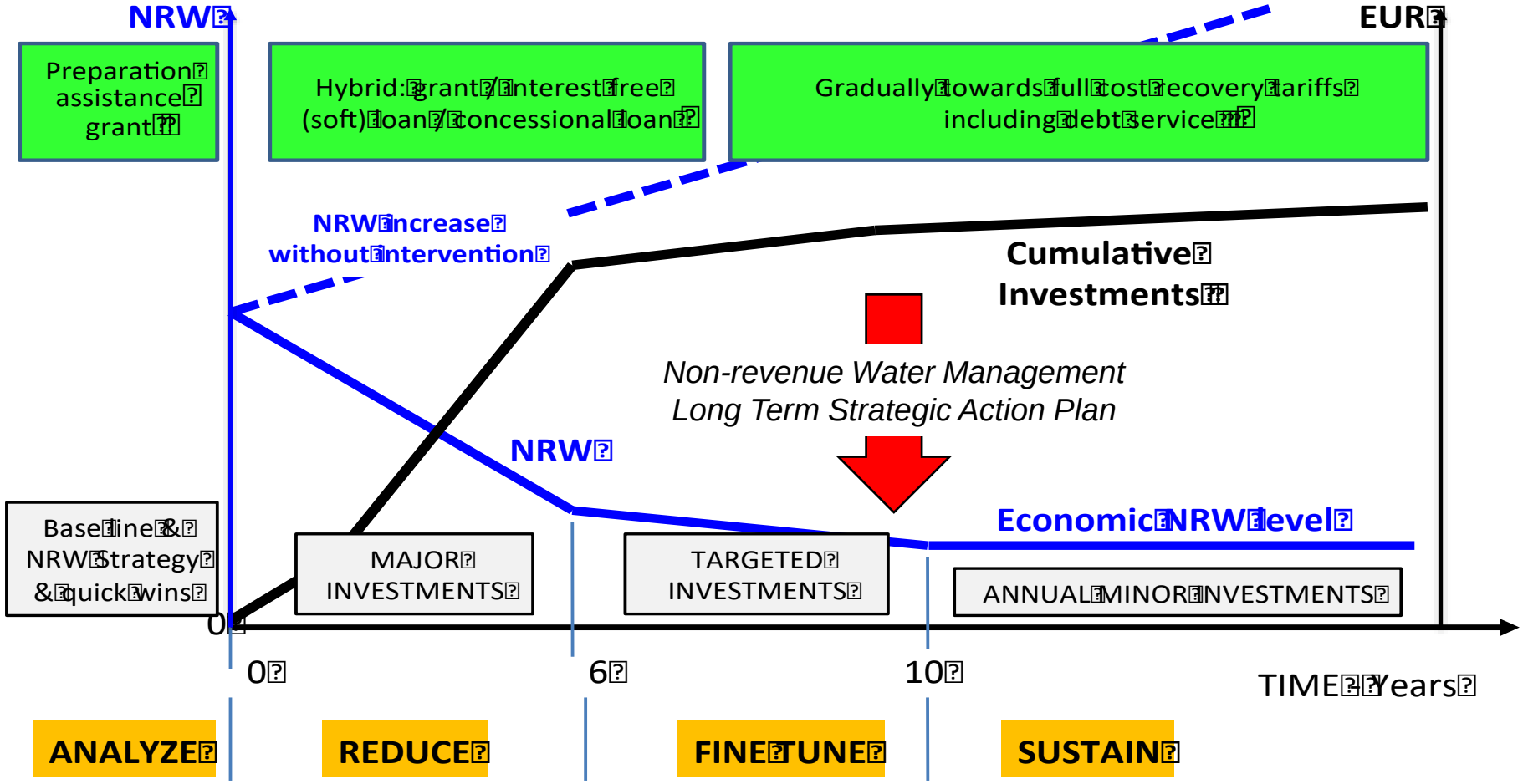
Maintaining NRW Reduction over the Long-Term

- Most of the contracts **focus primarily on rapidly reducing physical losses**. Maintenance periods were often quite short, designed to function like works contracts, with one-year warranty periods

- However, **maintaining loss reductions** is often beyond the institutional capabilities of the public entity. Most of the contracts used NRW reduction true-up at the end of the contract, liquated damages linked to night flows and/or retentions to maintain loss reductions during the maintenance period (often 1 year).

- These mechanisms **would not seem appropriate** if the contractor was to maintain the loss reductions **for a longer period**, for example until investment to reduce NRW had been recovered.

Sustainable Reduction of Non-Revenue Water



Source: Janssens, J.G., Charalambous, B., Kruger, J. (2013): Report on Fact-Finding and Identification for Building Up a Non-Revenue Water (NRW) Investment Portfolio in Sub-Sahara Africa, Infrastructure Consortium Africa (ICA), September 2013

Financing the NRW activities

PBCs are typically by a mix of public funds (e.g. donors lending) and private funds

- The contractor must pre-finance at least some activities since part of the remuneration will be paid only after tangible results are shown

The feasibility of accessing private funding (to pre-finance the bonus payment) depends on market conditions:

- It can be enhanced by careful design of the PBC, with instruments such as a partial risk guarantee (PRG)

CAPEX

Development investments (CAPEX)

- Network Extension
- Capacity Augmentation (production/transport/distribution)

Effect of leverage

Private

Public

OPEX

3Rs (IRC) – Recurrent Investments

(Repair/Replace/Renew)

(IRC: Infrastructure Renewal Charge)

O&M

variable

fixed

The Definition of the IRC

- It is important to make an estimate of the **Infrastructure Renewal Charge (IRC)**, which represents the forecast of the annual investments needed to maintain the serviceability of the infrastructure (distribution network).

- The IRC should include all expenditures involved with sustaining the system at its present state and protecting it from falling in value.

- The IRC serves as the depreciation expense for the underground network

Summary

1. PBCs are a good way to achieve improved performance and efficiency, compared to traditional contracting.
2. This requires to set up enabling conditions, to be implemented through IFIs, governments/municipalities, operators …
3. Performance incentives are good drivers of performance …
4. Application of PBCs obviously largely depends on local situations and nature of (*contractual*) partnership !
5. Agreeing on performance targets and performance based incentives, implies also agreeing to assume risks

Thank you