

Opening Address *Nederland Innoveert* Technology Festival

-13 March 2015-

Wim Kuijken
Delta Commissioner

Good morning, ladies and gentlemen,

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Welcome to the *Nederland Innoveert* Technology Festival. It is wonderful that so many of you have come here today. This venue is at the heart of our Delta. It is the place where the sea and the river meet, and, consequently, where things can really go wrong.

We have been working hard on our water safety for decades, but we always started after a disaster. For example, both the Closure Dyke and the Delta Works were constructed following major disasters. And our Room for the Rivers programme was launched following the large-scale riverside evacuations in 1995. We have set down the new Delta Plan for the 21st century to ensure that we are going to prevent disasters in the future, rather than responding after the event. In addition, we aim to organise our water supply in such a way that we can counteract damage due to dry spells (the other side of climate change). Other new approaches include climate-proof construction methods and water-robust spatial planning.

In short: with the Delta Programme, we are trying to preclude a new disaster – an approach which is unique in the world – and to answer the question of how we can ensure that, by 2050, our country will be resilient enough to cope with climatic extremes.

Last year in September, during the state opening of Parliament, I presented the water safety and freshwater issues to the government Cabinet in the so-called Delta Decisions. With these issues, we are creating a domestic market in which we will be investing 20 billion euros over the next thirty years.

As the government, we are collaborating with civil society organisations, knowledge institutes and parties in the markets. These parties constitute the driving force behind innovation. The Delta Programme is also collaborating closely with the Water Top Sector. Together, we address the Dutch domestic market in order to continually develop our know-how and to create opportunities in foreign markets. Now that we have a clear understanding of the issues at stake in the Delta Programme, the business community can

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respond by developing concrete innovations. We are asking everyone to look beyond the safety issue, when drawing up their plans. What other issues are on the line in the fields of nature conservation, recreation, urban development and economic functions? By joining forces with a collective view of the future, united in that one Delta Programme, there is much to be gained in many fields. The promenade at Scheveningen is a reinforced sea wall, but also a spectacular new waterfront for this seaside resort. The sea wall at Katwijk provides better protection from the sea, but also serves as a parking garage for beachgoers. The river Waal near Nijmegen has been widened substantially, in order to give the water more room. But in this wide stretch of water there is currently an island, with opportunities for urban development with a wonderful view of the river. Such a joint approach is more efficient and more economical, while it will also make the Netherlands better and more beautiful.

Many efforts are currently being expended within the Delta Programme to develop innovations and implement them in pilot projects. I will explain a number of striking examples involving water safety, the freshwater issue and spatial adaptation.

Water safety (slides 4, 5 and 6)

Innovation in the field of dyke reinforcement: an important element of the Delta Programme is bringing our dykes and dams up to standard. Concrete innovations contribute to reinforcing our dykes and dams. Recent innovations include the *nailing down* of dykes, a method which involves drilling ground anchors into the steep slopes of existing dykes in order to prevent them from sliding. Another example is the use of *geotextile* to prevent piping. Geotextile inserted vertically into the dyke serves as a kind of filter that allows water to drain but holds back sand. This method is cheaper than the conventional methods. At several locations in the Netherlands, pilot projects are underway to further develop the *sensor technology* for monitoring the stability of dykes. Other innovations focus on the *multi-functional use* of dykes, or involve innovative dyke designs in which dyke reinforcement is combined with natural development such as creating *foreshores* (Houtribdijk) or *hindshores* (Koopmanspolder).

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Sand Motor: the Sand Motor is an innovative solution, based on the principle of “building with nature”, to maintain the coastline in a natural fashion. The Sand Motor is a peninsula created out of some 21 million cubic metres of sand. The wind, waves and currents spread this sand along the coast, where it provides protection, new nature and additional recreational areas. Linked to the Sand Motor is an extensive research programme involving close collaboration between the authorities concerned, knowledge institutes and the private sector.

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Sludge Motor: sludge is used as a building material for natural islands with natural banks. A new dredging technology, the so-called sludge motor, is used to construct these islands. An example is the “Marker Wadden” project, in which meters-deep trenches are dug on the bottom of the Markermeer lake to collect sludge. The sludge motor serves as a vacuum cleaner, clarifying muddy water. This approach contributes to the restoration of nature and

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boosts biodiversity.

Freshwater (slides 7, 8 and 9)

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Delft Blue Water: areas with a freshwater shortage are exploring innovative new solutions to secure their freshwater supply. Research is being conducted to optimise the consumption of freshwater by combining the use of rain water and purified waste water. Delfland has a limited supply of freshwater. Rainwater is available to a limited extent (and not always clean), while groundwater may be brackish and require desalination. Delft Blue Water is conducting research into the reuse of waste water purified for irrigation purposes. In 2013, a Westland greenhouse pilot was launched in which this innovative approach is monitored. This technology also offers opportunities in international markets which have a water shortage where waste water is available.

Reservoir water: the Reservoir Water project focuses on measures for a more efficient use of freshwater, particularly in saline areas. The project comprises four pilot locations in the Wadden region. The freshwater supply is augmented by the formation of freshwater bubbles, system-oriented drainage and expansion of the storage capacity of the subsoil. Various irrigation methods enable the water from the freshwater bubble to be reused.

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Smart Polder: innovations are also being implemented in the fields of water and energy. An example is the Smart Polder, an intelligent network of energy-neutral polder pumping stations. Here, water management is linked to the generation of energy and the use of IT. For example, seasonal differences in temperature of surface water can be used to heat or cool buildings. The polder pumping station may be converted into a power plant providing sustainable thermal energy. The reclamation of heat from surface water has a positive impact on improving the water quality. Among other things, it helps to prevent botulism and blue algae.

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Spatial adaptation (slides 10, 11, 12)

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Innovative water storage in the city: the “underground water storage” is one of the measures to reduce water nuisance in Rotterdam city centre. A parking garage with water storage facilities makes optimum use of the scarce room in the heart of the city. However, the two functions, parking and storing water, remain separated at all times. The complex serves as a temporary storage for rainwater in heavy or prolonged showers. If the canals and sewers in the city centre are no longer able to handle the quantity of rainwater, the underground water storage temporarily collects the surplus rainwater. Once the rain stops, the storage tank is drained into the sewer. Another innovative example of “above-ground water storage” is the water plaza. With its three basins, the Benthem Square in Rotterdam is the world’s largest water plaza.

Multi-functional water control structure: areas with a shortage of space often benefit from multi-functional solutions. In Katwijk, an underground parking garage is combined with reinforcing the sea wall. The “dyke-in-dune” is a stone-clad sand dyke, covered with new, wider dunes. The additional dunes reduce the alluvion on the dyke. In addition, this construction enables an underground parking garage to be built along the promenade. A

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fine example of linking opportunities.

National 3D Model: until a few years ago, data used to be a restrictive factor. However, since we now have so much data available, the models have become restrictive. Innovative calculation methods have recently enabled us to use all this data in calculation models. This yields spectacular results. By combining information with a unique data set with altitude data, we can construct a national 3D model of the Netherlands. Underwater measurements provide information on the soil level of rivers, estuaries and ditches, and shows how these levels change over time. This innovation has multiple uses in operational management and calamities. It can be used for water system analyses and the formulation of spatial plans.

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Of course, there is a wide range of other examples. If you are interested, take a look at the Delta Programme 2015.

Ladies and gentlemen,

From day one, we have worked together with all the parties concerned in the Delta Programme, gathered around the two national goals: water safety and the freshwater supply. This enables us to amass, study and share all the relevant facts. Together, we conduct the analyses and together we explore and discuss possible and promising solutions. Level-headed and energetically. The planned investment of 20 billion euros allows us to ensure that both our citizens and our economy are well protected from the water in the years ahead. The task of protecting the Netherlands against flooding and securing a sufficient supply of freshwater is a huge one, urgent, and of enormous social significance. It requires an effort from many, for many. I hope that we will accomplish this task on time – but, of course, with the climate, you can never be sure.

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Thank you for your attention.
